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STEEL LINING SECTION OF ASTORIA-BRONX GAS TUNNEL.
Before concrete lining was placed. Construction track resting on permanent steel beams.

THE ASTORIA-BRONX GAS TUNNEL

Constructed Beneath East River, New York, to Carry Two Six-Foot Cast Iron Mains—Sealing Water-Bearing Seams with Cement Grout—Bulkheads for Testing Individual Pipe Joints.

By J. F. SPRINGER.

The new subaqueous tunnel beneath the East River for the housing of gas mains running from Astoria, L. I., to 132d street, The Bronx, is now almost ready for service. In it are being laid two mains of cast-iron pipe, 72 inches in internal diameter, which are believed to be the biggest cast-iron pipes ever made. The construction of the tunnel itself has turned out to be an undertaking of considerable difficulty, and the handling, laying, calking and testing of the pipe lines have been a noteworthy work.

The tunnel lies 225 feet beneath the water level in the river, and is nearly 0.9 mile long. There is a shaft at each end, making the total length of the excavation nearly the whole mile. In cross-section the tunnel has the form of a horseshoe with a flat curve at the bottom. The width is 19 feet and the height 18. Both tunnel and shafts are lined with concrete.

The excavation for the major part of the total length

was carried out without incidents of a very unusual character. The difficulties were mainly concentrated upon a short tunnel length of perhaps 450 feet near The Bronx end. Here there is a depression in the river bottom overhead and a juncture of two geological formations. Much of the rock in the neighborhood of the juncture is badly disintegrated and fissured and the water from the river penetrates it under pressure, thus producing a problem for the engineers. This problem could not be solved by the use of compressed air for excluding the water from the excavation, as the limit of human endurance seems to be an atmosphere having a tension of 45 or 50 pounds per square inch, while the hydrostatic pressure at the depth of the tunnel was about 95 pounds. The general method adopted was to explore ahead of the actual excavation by drill holes and then to force in cement grout wherever it seemed necessary for the purpose of sealing off the water in the fissures and cracks. Grout

was forced in with pressures which ranged up to 500 pounds per square inch. A large amount of cement was used for this purpose, the number of bags running into four figures. The bore holes were given a length and direction such as to enable them to command a region well outside the actual tunnel lines. The effect of the grouting was to consolidate the disintegrated and fissured rock, enabling it to be excavated without flooding the tunnel. These operations were highly successful.

At one time, three-fourths or more of the tunnel, together with one of the shafts, was flooded in consequence of a break in the rocky wall of the excavation. Cement was employed to seal the fissure responsible for the inflow and also to fill up a flooded chamber lying between two bulkheads. In fact, cement at this time saved the tunnel, enabling the leaks to be sufficiently grouted up to permit of the unwatering of the excavation. The grouting operations were carried on from the dry side of a bulkhead on the Bronx end.

There are probably many tunnel workings where this method of cementing bad rock in advance of excavation could be used to advantage. The procedure, while comparatively new, has been so thoroughly tried out on important work that its practicability is beyond question, whether applied on a small or a big job.

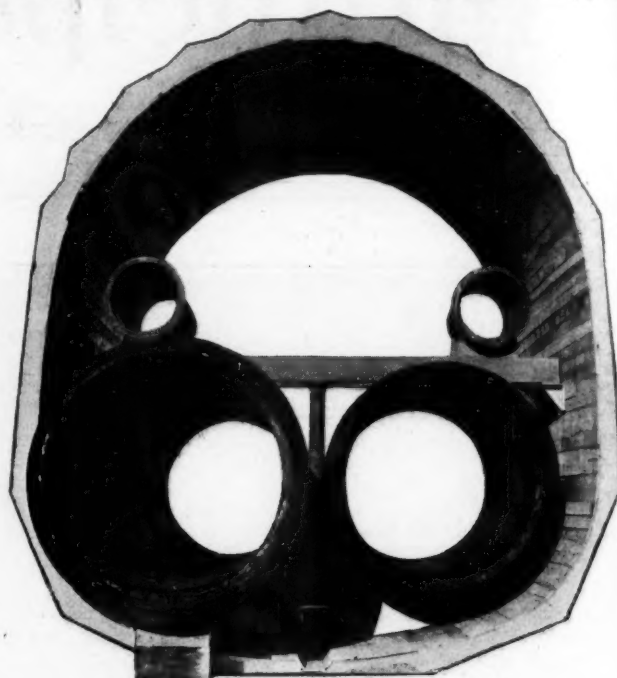
After the unwatering, there remained a good long length of unexcavated material covering the entire bottom up to about half the height of the tunnel. Cement grout was used to consolidate this rock, which was of a difficult nature because of its water-bearing character. Buried in the concrete lining of this difficult section of the tunnel is now a 450-foot length of metal lining, part cast-iron and part steel, the former for construction purposes, the steel to give a water-tight lining.

The pipe lines in the tunnel are laid on concrete saddles, two saddles to a 12-foot length of pipe. The joints of the two lines are staggered. The hauling of the saddles and pipe lengths was done by a construction tramway operated by an endless cable. The saddles are reinforced, not so much to give them permanent strength as to prevent breakage during handling. About 1,500 saddles were required for the two mains.

The cast iron pipe is $2\frac{3}{4}$ inches thick and each length weighs some 26,000 pounds. They have bell and spigot ends and about 225 pounds of lead was required per joint. The relative weight of pipes and volume of dis-

placement are such that if the tunnel were filled with water the mains would not float off the saddles.

The calking of the joints was done by use of small air-driven calking hammers. The calking space was $\frac{3}{8}$ inch



FULL SIZE MODEL OF TUNNEL.
Showing 72-inch mains on saddle and small mains above resting on I beams.

wide and $5\frac{1}{2}$ inches deep, which was filled with lead wool preceded by 4 pounds of soaped hemp yarn and 10 pounds of dry.

It was required that the joints be tested by an air pressure of 20 pounds per square inch, applied to sections of 10 lengths as these sections were laid. Because this requirement had the effect of limiting the speed of laying to the speed of calking and because it was considered that the use of a portable bulkhead of an ordinary type would cause delay, it was decided to use a rather novel device. J. V. Davies, of the firm of constructing engineers, devised a machine for testing individual joints, to be shifted along the pipe on the inside from joint to joint. This device consists of a double bulkhead enclosing an annular space wide enough to include a short distance either side of the joint. A cylinder smaller than the pipe carries on each end, between its surface and the pipe, two pneumatic tubes of fine rubber which, when inflated, make airtight bulkheads. When these are deflated, the machine may be shifted so as to bring one tube on each side of a joint to be tested. The tubes are then inflated at 50 pounds pressure, and the annular space between them is placed under 20 pounds air pressure, the joint test required.



BULKHEAD FOR TESTING JOINTS.
It is moved along the pipe on two wheels placed tandem.
The pressure gauge is seen at the left.

RELAYING BRICK IN MEADVILLE.

The city of Meadville, Pa., purchased from the street railway company 155,700 paving brick which had been used between the car tracks, at \$7 per thousand. By the use of these brick, which were in good condition on the reverse side, a saving of \$572 over the cost of new brick was effected in laying 1,496 square yards of pavement on Arch street. The total cost of this construction was \$1,712.70, the old macadam roadway in some places being used in lieu of a concrete base. A little more than half the brick were used for this work. Of the remainder, some were sold at \$12 per thousand; the rest are stored

in the city yard and will be used for crosswalks and repairs.

During the past year eight brick crossings were constructed by the city forces at a total cost of \$126.43. It has been found that brick crossings can be built as cheaply as concrete, while they have the additional advantage that the brick can be salvaged, should it be necessary to remove the crossing.

LYNN WATERWORKS IMPROVEMENT

Construction of Earth Dam with Concrete Core Wall, Dykes and Spillway—Electricity Used for Power by Contractor and for Pumping Plant.

By W. B. CONANT.

The city of Lynn, Mass., has recently added considerably to its available water supply by constructing, in the southwestern part of the city, a reservoir known as the Breed's pond reservoir. Breed's pond was an old mill pond dating from early times but later used by the city as a source of water supply. It is located about three miles from tide water, the ground elevation at this point being about 50. This pond is fed by a stream from another pond called Walden pond, about three-quarters of a mile away, which has an area of 240 acres, the elevation of high water in which is 98. The new dam at Breed's pond has an elevation of 110 and a spillway elevation of 105. A 36-inch iron pipe line has been laid to connect these two ponds and water flows from Walden to Breed's by gravity until Breed's reaches elevation 98, after which it is pumped into Breed's pond.

As a further reserve supply to the system, a 36-inch cast iron pipe line $5\frac{1}{2}$ miles long has just been laid to connect Ipswich river with Walden pond. The legislature has given the city right to pump water from the river into its system during the six months of the year, from November to May. When this whole system has been put in co-ordinated working order, a supply adequate for twenty-two months will be constantly on hand, and will be sufficient for the daily use of a population of 300,000 people. The present population of Lynn is 90,000. When all parts are in service, which will probably be by July, 1916, this Breed's pond system will be the second largest single source of supply in the state.

One of the most important and interesting portions of this work was the construction at Breed's pond, by which a reservoir has been provided with a capacity of 1,900 million gallons. This has been formed by the construction of a dam 1,507 feet long, earth dykes, and a ledge. The basin of the reservoir has been stripped of soil and vegetation.

The main dam consists, in plan, of three tangents, making an obtuse and a reflex angle, the tangents being respectively 845 feet, 373 feet and 289 feet long. A central concrete core runs the entire length of the dam. It is carried to solid ledge throughout, which required excavating to a depth of from 4 feet to 18 feet 6 inches below natural ground level. The lowest part of the concrete wall foundation is at elevation 22 feet 6 inches and the crest of the wall is at elevation 108, two feet lower than the top of the earth structure enclosing it. This wall is 2 feet 9 inches thick at the top with a batter of $\frac{3}{4}$ -inch to the foot on each side.

Earth for the embankment of the dam was excavated in the reservoir basin, brought by train and deposited in 6-inch layers, which were rolled solidly. A slope of 2 to 1 was given to both upstream and downstream faces, with an 8-foot berme on the downstream face at elevation 90, and a 6-foot berme on the water face at elevation 80. The water slope is paved with broken stone and

field stones to a depth of more than 2 feet. The stones used average $\frac{1}{2}$ ton each and were handled by use of derricks.

A spillway 25 feet wide, 5 feet lower than the crest of the dam and 3 feet lower than the crest of the core, was excavated in solid ledge. Concrete walls reinforced with $\frac{3}{4}$ -inch twisted rods were built as sides to the channel, which takes an irregular course down the side of the hill to a canal. A gate house was constructed at the upstream toe of the dam, 140 feet from the center line. It is of reinforced concrete with walls $3\frac{1}{2}$ feet thick at the top and 6 feet at the bottom. It is 17 x 17 feet square at the top, which is at elevation 110, and rests upon a base of concrete 10 feet thick, which in turn rests upon hardpan. In the center shaft, which is 10 feet square, are six sliding screw-operated gates at various elevations which discharge into a 36-inch cast iron pipe line which leads to the pumping station.

The contract for the core wall and gate house was let to James E. Manning, of Lynn, in 1910, for \$93,821. The wall at this time was carried to an elevation of 76 feet. T. Stuart & Son Company, of Newton, constructed the main dam above elevation 76 and also another section between outcropping ledges known as the Lantern Rock dam for a total of \$236,197. The unit prices for both the Breed's Pond and Lantern Rock dams were as follows: Earth embankment, 65 cents a cubic yard; slope paving, \$1.65 per square yard; concrete, \$6.25 per cubic yard; stripping excavation, 65 cents per cubic yard; trench excavation, \$1.50 per cubic yard; rock excavation, \$3 per cubic yard. The total amounts estimated were as follows: Earth embankment, 148,000 cubic yards; slope paving, 13,702 square yards; concrete, 12,760 cubic yards; stripping excavation, 14,760 cubic yards; trench excavation for core wall, 4,693 cubic yards; rock excavation, 5,671 cubic yards.

The stripping of the basin and covering the bottom in places with gravel were performed by the city at a cost of \$60,000, labor being paid \$2.50 per day. In addition,



SPILLWAY AND REINFORCED WALL, BREED'S POND DAM.

the city constructed five small dikes or earth embankments at various points in the reservoir perimeter, which involved the moving of about 15,000 cubic yards of earth.

In carrying out their construction work, T. Stuart & Company used electric current for power, which was furnished by the Lynn Gas & Electric Company at a rate of 1½ cents per kw. h., which made electricity the most economical as well as the most efficient and convenient source of power for the work. A 200 h. p. motor was used for driving air compressors for drilling, a 150 h. p. motor for operating a second compressor, a 50 h. p. motor for driving a rock crusher and a 25 h. p. motor for performing various kinds of work. The contractor used something over 30,000 kw. h. a month during the time of active construction.

The pumping apparatus at the Ipswich river for raising water from this to Walden Pond will be electrically operated and will have a daily capacity of 1,500,000 gallons. Bids for this apparatus will be asked for in a short time. Electric energy for the plant will be furnished by the Lynn Gas & Electric Company. In laying the pipe line connecting the river and Walden Pond, considerable blasting was necessary, and the cost of the 5½ miles was about \$200,000. The pipe was purchased from Wilmington, Del., brought to Lynn in barges and stored at Breed's wharf in the city, where 3,000 lengths could be stored at one time. Almost 7,000 tons of pipe was used.

All of this work was in charge of Thomas Campbell, water commissioner; W. L. Vennard, city engineer, and J. W. Raymond, Jr., resident engineer.

SAFE STREET FLUSHING.

Two court decisions have been rendered and abstracted by us (July 1 and September 16, 1915) in which it was held that a street flushing machine operating with the nozzle making an angle of 20 degrees or less with the pavement infringed the Ottoby patent, while it seems that if the nozzle operates at an angle greater than 20 degrees, the user would be safe from patent suits. But it should not be overlooked that this is the legal point of view and relates only to the question of whether or not the patent has been infringed, with no consideration of the relative efficiency of nozzles at different angles. It is plain, therefore, that before using a flushing machine with a nozzle at an angle greater than 20 degrees a city should consider the engineering or practical effect of this, which is vastly more important than the legal.

When flushing machines were first introduced there was considerable opposition to them by paving engineers and superintendents on the ground that jets of high velocity would destroy the pavements. One prominent engineer, we recall, attempted to prove by physical laws that pavements would be lifted bodily from their foundations by such jets. That such destruction is not taking place is apparently demonstrated by the increasing use of flushing machines, until they have taken their place as standard apparatus for street cleaning departments. But the arguments possessed the considerable element of fact that, if the jet is directed too nearly vertically against the pavement there will be more or less destructive effect—joint material between blocks will be scoured out and there may be even a sand-blast effect in wearing the paving material itself.

But if the jet strikes the pavement at approximately a tangent, this destructive effect appears to be negligible; and there is the additional advantage that the dirt is flushed across the roadway into the gutter, and not merely loosened and softened and allowed to settle back into its original position. On the other hand, the use

of too nearly vertical a jet leaves the mud to be swept into the gutter or into piles, thus increasing the cost of cleaning; and (the more serious result) the pavement is rendered rough and its life considerably shortened. It is apparent, therefore, that no street cleaning official is doing his duty by the city who yields to suggestions from the legal department that he use jets set at a dangerous angle.

What this angle may be is a practical problem to be solved largely by experience. At one of the first suits centering around street flushing patents, we believe a considerable majority if not all of the experts testified that the angle must be less than about 20 degrees; the smaller the angle the better. (The angle named is that which the nozzle makes with the horizontal, or rather, with the plane of the pavement). There would therefore seem to be no possible justification for using a jet at a greater angle than this; rather than endanger the pavement by doing so, it would be better to use no jet machine at all, but employ other methods, even though more expensive in operating cost.

TYPES OF BITUMINOUS PAVEMENTS*

Methods of Construction and the Limitations of Each—
Foundations—Coarse and Fine Aggregates—Penetration, Hot and Cold Mixing Methods.

By FRANCIS P. SMITH†

The selection of the most economical and suitable types of bituminous road construction to meet a given set of traffic, climatic, subsoil and drainage conditions involves a clear comprehension of the limitations of the various types in use and the conditions essential to their successful employment. Certain conditions should absolutely preclude the use of certain kinds of construction, regardless of possible low first cost, and disregard or lack of knowledge of the vital principles underlying different forms of construction has often resulted in the waste of large sums of public and private money.

FOUNDATION.

Whatever type of construction is decided upon, it must always be borne in mind that a bituminous wearing surface is flexible and will only give good service when it is properly supported by an adequate foundation. Soft spots or weak places in the foundation will cause a settlement of the overlying wearing surface which will result in rapid deterioration. Water will collect in such low spots and rapidly destroy the bond between the bituminous binder and the mineral aggregate. The wheels of each vehicle passing over such depressions will strike a heavy blow as they drop down into them and cause displacement of the wearing surface, resulting in the formation of a ridge which still further adds to the vibration of the springs and causes successive blows to be dealt to the pavement until the spring vibration becomes normal again. This, of course, results in the formation of waves. In most heavy commercial vehicles the springs are comparatively short and stiff. The vibrations are, therefore, rapid and tend to strike very heavy blows, resulting in wave formation at right angles to the line of traffic having their crests from 3 to 4 feet apart. This is plainly noticeable on roads having a bituminous wearing surface and it is still more evident on water-bound macadam roads. The poorer and less rigid the foundation, the more pronounced the waves. This is distinct from the shearing or shoving action exerted by vehicles round-

*Paper before the American Society of Municipal Improvements.
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ing curves at a moderately high rate of speed. The motor bus is, perhaps, more directly responsible for this type of wave formation than any other modern type of vehicle. In England, more especially in the neighborhood of London and other large cities, it is easy to pick out those roads which carry motor bus traffic, as they invariably show the kind of wave formation above described. On water-bound macadam roads it is no uncommon thing to find considerable stretches in which the difference in level between the wave crests and troughs amounts to 4 inches and over.

This wave formation is noticeable in rock and sheet asphalt pavements laid on 9 inches of concrete, as well as on country roads covered with sheet asphalt, tarred slag, bituminous concrete or bituminous macadam. Generally speaking, the wave formation in sheet or rock asphalt pavements laid on concrete foundations, while noticeable, is not excessive, whereas in the case of bituminous surfaces on inferior macadam foundations, it is one of the primary causes of disintegration. The writer believes that much of this could be avoided by having longer and more flexible springs on vehicles of this type, thus greatly lessening the road shock.

Slowly moving, heavily loaded vehicles are much more prone to cause displacement and wave formation than are the lighter type of vehicles moving at a speed of from fifteen to twenty-five miles. This was clearly shown by a 60-ft. street in one of our eastern cities, which was paved with bituminous concrete mixture containing more stone than the average Topeka mixture. The foundation was 5 inches of concrete and the average grade about 3%. A trolley line in the center of the street sharply divided the moving traffic. The traffic uphill was composed largely of slowly-moving, loaded, three-to-four-ton, horse-drawn vehicles and a few motor trucks; whereas on the down grade it was confined to light delivery wagons and empty trucks, but the number of vehicles on each side was about equal. The pavement on the uphill side very soon developed wave formation to such an extent as to require a large amount of resurfacing, whereas that on the downhill side gave satisfactory service for a longer period with practically no wave formation. Both sides were laid with the same mixture and at the same time. The concrete in many places was defective and at these points the wave formation was most marked.

In the writers' opinion, wherever the traffic calls for a bituminous surface, a concrete foundation is justified and economically sound. There is always movement in a macadam foundation, as evidenced by the rounded edges of the stone of which it is composed. This is noticeable wherever a macadam road is dug up or scarified; if the larger particles of stone are screened out from the mass and examined, their edges will be found to have become rounded by attrition. Where the traffic is very light, as on country roads which are not main arteries from or between large cities, and in some residential streets, old macadam roads have proven to be suitable foundations for bituminous surface mixtures. Far more failures than successes have resulted from their use, however, and great caution should be observed with respect to employing them. In England a number of fairly heavy traffic roads have been successfully surfaced with sheet asphalt or bituminous concrete, using the old macadam as a foundation, but as a rule their macadam roads have been in existence for a long time and have been properly constructed and, owing to their moist climate, have been thoroughly drained. They, therefore, start with a much better foundation on the average than we can hope to obtain. Their winters are mild and frost rarely penetrates to any considerable depth in the earth, hence they are free from heaving and the unstable conditions produced by our spring thaws.

When the subsoil draining and climatic conditions are especially favorable, a foundation of four to six inches of broken stone properly consolidated by rolling may be used for light traffic roads. Except under extremely favorable conditions, the proper construction and drainage of a base of this kind will cost more than would 4 to 5 inches of concrete.

BITUMINOUS WEARING SURFACE.

The question of foundation having been settled, the kind of wearing surface must next be determined. The various types of bituminous construction under consideration may be classified as follows:

- | | |
|--------------------|--|
| Coarse aggregates. | { Penetration method.
Cold mixture.
Hot mixture. |
| Fine aggregates. | |
| | |

As between coarse and fine aggregates, the heavier the traffic (more especially that carried on iron tires), the finer should the mineral aggregate be. Large particles of stone will be fractured sooner or later by the passage of heavy loads over them. Wherever such a fracture occurs we have two faces which are not cemented together by bituminous cement. This permits grinding away and the entrance of water, two extremely destructive agencies. As illustrative of this, in certain sheet asphalt pavements laid by the writer in heavily travelled sections of Glasgow, Scotland, it was found to be necessary to exclude grains of sand coarser than those passing a 20-mesh sieve, as even 10-mesh grains would crack and permit the water to enter and destroy the pavement. In a test made this winter in the presence of the writer of a bituminous road surface of the National Physical Laboratory at Teddington, England, in which a road continually flooded with water was tested to destruction by the passage of heavily loaded iron tired wheels over it, it was found that disintegration commenced at those points where large sized grains occurred on the surface. Large sized aggregates give a rougher road surface, and hence better foothold for horses, than do smaller sized aggregates, and automobiles are less liable to skid upon them in wet weather. For light and moderate traffic there is, therefore, much to be said in favor of large sized aggregates.

As between penetration methods and mixing methods, the latter are undoubtedly far superior. In the case of Portland cement concrete, except in special forms of construction, grouting is seldom resorted to except where mixing is impossible, and in this case we have a fluid cement which readily penetrates the interstices without chilling or becoming solid for a very considerable period of time. When grouting broken stone with a hot bituminous cement, its tendency is to chill as soon as it strikes the colder stone. Its distribution is, therefore, very uneven and whenever the interstices are small, practically no penetration takes place. Work of this character should never be done except in the hottest weather and yet we see many of these roads constructed in the late fall. It is really the most difficult kind of bituminous work to execute properly and yet, because of the cheapness of the plant required, many contracts are let to small contractors who never have done such work before. A few years ago suitable portable mixing machinery was not available for work of this kind except in the vicinity of railroads and hence some type of bituminous construction had to be developed which was cheap and could be put down without the use of heavy and non-portable plants. These conditions no longer exist and the writer believes that for this and other reasons the penetration method of construction will grad-

ually disappear. When, because of failure or increase in traffic, it becomes necessary to reconstruct a penetration road laid on a broken stone foundation, practically all of the road must be removed and this is an expensive piece of work. This is not true of a bituminous road laid on a concrete foundation. The foundation can still be utilized and in most cases resurfacing is all that is necessary.

As between hot and cold mixtures, the hot mixtures can be better graded and more thoroughly compressed by rolling and are, therefore, somewhat better suited for fairly heavy traffic. For light traffic the cold mixture will in many instances give equally good results and will often be very much cheaper and will, therefore, always have a wide field of usefulness. Cold mixtures would appear to be ideal for use by road patrols in the upkeep of bituminous road surfaces constructed of large aggregates, and are much superior to hasty mixtures of stone and bituminous binder, often imperfectly made on the spot, with inadequate appliances, by more or less inexperienced workmen.

The so-called Topeka mixture is intermediate between the sheet asphalt and the coarse aggregate mixture. As ordinarily made, it consists of a standard sheet asphalt mixture to which has been added from 15 to 25 per cent of the stone passing a $\frac{1}{4}$ -inch screen and retained on a 10-mesh screen, and 10 per cent or less of stone passing a $\frac{1}{2}$ -inch screen and retained on a $\frac{1}{4}$ -inch screen. When well made and laid, however, its surface is no rougher than sheet asphalt. Owing to the somewhat lower percentage of bitumen which it contains, and the fact that it is usually laid without a binder course, it is somewhat cheaper than sheet asphalt. It is, however, a more difficult pavement to lay satisfactorily. Theoretically speaking, the coarse stone particles which it contains should make it a more stable pavement and one less liable to shoving and wave formation. As a matter of fact, however, a slight excess of bitumen renders it much more unstable than even an inferior sheet asphalt pavement, and liable to extreme displacement under traffic. This probably is due to the fact that it does not contain sufficient stone to permit the larger particles to be closely keyed together. When the mixture becomes plastic through heat, these large particles are therefore relatively free to move, the only restraint to such movement coming from the relatively fine sheet asphalt mixture in which they are embedded. Owing to their size, a pressure tending to displace them acts with a greater total force than it would exert on, for example, a sand grain 1-10 of an inch in diameter, in addition to which in many cases there is a distinct leverage action. Too little bitumen will make a Topeka mixture open and water-absorbent, and a variation of 0.5 per cent of bitumen above or below its proper content is about the limit of safety. Double this variation in a sheet asphalt pavement will not seriously affect it. For medium and light traffic the writer believes that a not too dense sheet asphalt mixture laid the same thickness and under the same conditions as the Topeka will give at least as satisfactory service and will be much safer to lay in the long run. The Topeka mixture appears to him to be a hybrid possessing vices and weaknesses peculiarly its own and not as good as either of the types which it is intended in part to supplant.

For very heavily travelled city streets, sheet asphalt on concrete foundation is undoubtedly the best type of bituminous pavement. When sheet asphalt is laid on very light traffic streets a somewhat coarser sand should be used than for heavy traffic streets. As the number of particles decreases, the surface area to be covered with bitumen also decreases. In this way, without increasing

the percentage of bitumen in the mixture, a thicker coating of bitumen is obtained on each grain of sand and the pavement will not crack as readily under minimum traffic as will a standard heavy traffic mixture. All sheet asphalt pavements are improved and their life prolonged by the passage over them of sufficient traffic to exercise a constant kneading action and equalize the internal stresses set up by contraction and expansion.

A comparative table showing the average composition of the various bituminous surface mixtures discussed herein is given:

Average Composition of Various Bituminous Surfaces.

	Coarse Aggregate Bituminous Concrete		Fine Aggregate		
	Hot Mixture	Cold Mixture	Topeka	Sheet Asphalt Light Traffic	Sheet Asphalt Heavy Traffic
Bitumen	7.0	6.5	8.5	10.5	11.0
Passing 200 mesh....	5.0	4.5	8.5	10.5	14.0
Passing 100 mesh....	4.0	1.5	6.0	10.0	14.0
Passing 80 mesh....	2.0	1.5	6.0	10.0	13.0
Passing 50 mesh....	5.0	1.5	6.0	14.0	19.0
Passing 40 mesh....	4.0	1.5	10.0	14.0	11.0
Passing 30 mesh....	4.0	1.5	10.0	13.0	10.0
Passing 20 mesh....	3.0	3.0	9.0	10.0	5.0
Passing 10 mesh....	5.0	5.5	6.0	8.0	3.0
Passing 8 mesh....	3.0	5.0	6.0	—	—
Passing 4 mesh....	7.0	8.0	14.0	—	—
Passing 2 mesh....	20.0	40.0	10.0	—	—
Passing $\frac{3}{4}$ " mesh....	14.0	11.0	—	—	—
Passing 1" mesh....	12.0	9.0	—	—	—
Passing $1\frac{1}{2}$ " mesh....	5.0	—	—	—	—
	100.0	100.0	100.0	100.0	100.0

Summarizing the foregoing brief discussion of the various principles and considerations involved in the different types of bituminous construction, we have the following:

Foundation.

Old Macadam: Suitable for light traffic under favorable climatic and drainage conditions, *but only when properly constructed and drained*. Thickness and character of stone layer and method of construction should be determined by test holes before adopting it. Road must be carefully shaped and graded, preferably by the building up process, before laying any bituminous top upon it. Inferior to concrete.

Broken Stone: Suitable for light traffic but only under favorable climatic conditions. Inferior to well-constructed old macadam and to concrete.

Concrete: Four to 6 inches thick, depending upon traffic and character of subsoil. This is much the best type of foundation and is the least expensive to resurface.

Coarse Aggregate.

Penetration Method: Suitable for light traffic only; gives a rough surface; best results can not be obtained except with skilled labor. Should only be carried on in hot weather and stone should be at a uniform temperature not below 60° F. when binder is applied. No plant required, melting kettles being all that is necessary. Extreme care needed to prevent rich spots and bleeding. Stone must be carefully spread and fine material rigidly excluded from lower course, otherwise penetration of bituminous binder will not be satisfactory and uniform. Bituminous binder must not be overheated and must be at proper temperature and uniformly applied.

Cold Mixtures: Suitable for light traffic only; gives a rough surface. Stone must be clean and carefully graded. Bituminous cement must be of proper consistency, otherwise mixture will not be workable. Should not be laid at a lower temperature than 40° F. Work should preferably be done in warm weather. Can be manufactured at the quarry from which the rock is obtained and shipped ready to lay to the work. Rolling should be continued until maximum possible compres-

sion is obtained. Especially suitable for repair work done by patrol gangs on coarse aggregate surfaces.

Hot Mixtures: Suitable for light and medium traffic only; gives a rough surface. Stone must be clean and carefully graded to secure best results. Can be laid at any time of year. Heating and mixing plant must be within hauling distance of the work. Rolling should be continued until maximum possible compression is obtained.

Fine Aggregates.

Topeka Mixture: Suitable for light and medium traffic. Gives a comparatively smooth surface. Heating and mixing plant must be within hauling distance of the work. Great care must be exercised to keep bitumen contents within proper limits. Stone and sand should be weighed separately into mixer to secure uniform mixture. Can be laid at any time of year. Rolling should be continued until maximum compression possible is obtained. Unless very carefully manufactured is more liable to shoving and displacement under traffic than is sheet asphalt.

Sheet Asphalt: Suitable for light, medium and heavy traffic but should not be laid on as steep grades as is permissible with coarse aggregates. Gives a smooth surface and can be laid at any time of year. Heating and mixing plant must be within hauling distance of the work. Rolling should be continued until maximum compression possible is obtained.

PORTLAND'S CONCRETE LIGHT STANDARDS.

By HALDANE WHITE.

Portland, Oregon, is saving approximately \$10 each on fancy concrete park and boulevard lighting posts by having municipal employes make the posts and set them instead of purchasing the posts ready made or

contracting for their manufacture. By contract the city used to pay \$26 each for the posts. Recently forms were built and the park employes are making the posts and setting them at a total cost of \$16.10 each, complete except for the glass or metal top.

A standard design of post has been adopted here, the plan having been worked out by park superintendent Convill, which is considered very attractive both in parks and playgrounds and along boulevards. The post is 13 feet in height and weighs 900 pounds. The base is two feet across and the post tapers down to five inches at the top. It is set on a foundation of concrete two feet in diameter, sunk four feet into the ground. The post proper is reinforced with four three-eighths inch reinforcing rods so arranged that they tie onto loops left protruding from the top of the base. Also the post is reinforced with a three-quarters inch galvanized pipe which extends through the center and serves as a conduit for the electric wiring.

Ten forms have been built by the Park Bureau for the manufacture of the posts, which can easily be taken apart, being built in sections of wood. When a post is being made the reinforcing rods are placed first and then the forms locked tight with clamps. The concrete is poured into the form from the top.

It has been found necessary to increase the richness of the concrete mixture as the post narrows down to the five inches at the top. The richness is worked down so that the small top is just as strong as the bottom, although there is much difference in size. It required much experimentation to get the proper richness of mixture for each part of the post.

The posts upon completion are coated with cement which, when dry, gives them a white surface. When they are set in place they are fitted with large white globes enclosing cluster incandescent lights, which furnish adequate light for parks at night and are very attractive in appearance during the daytime.

(Note.—A similar post made in Seneca Falls, N. Y., was described in our issue of September 16th.—Editor.)

CUSHIONS FOR BRICK PAVEMENTS*

Disadvantages of the Two-Inch Sand Cushion—Use of a Mortar Cushion—Bedding Directly in Fresh Concrete.

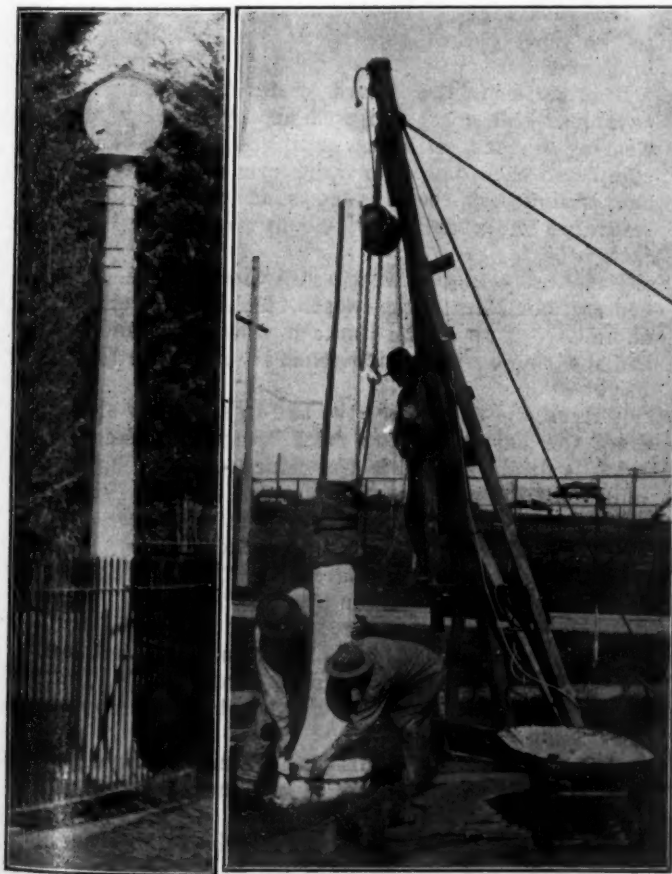
By WM. C. PERKINS, M. Am. Soc. C. E.†

The value of the plain sand cushion is being questioned by paving engineers. Many failures occur in brick pavements which can be traced to the non-uniformity of the sand cushion or to a cushion not properly compacted. Many engineers take the ground that the only function of the sand cushion is to provide a uniform bearing for the brick wearing surface—the smooth compacted sand taking care of any inequalities of brick or any variation of the foundation. We believe that the thickness of the bed of sand should be as small as possible, never over one inch.

It is claimed that a grouted brick pavement should have a cushion so as to give it "resiliency" under traffic. We question if sand confined between a concrete foundation and a brick wearing surface has any real elasticity. We grant it may yield, shift or be compacted by traffic weight on the wearing surface of the pavement and that the cement grouted wearing surface will of itself spring back; but the sand will not follow, and we have a small air space between the sand and the grouted brick wearing surface. This can be easily demonstrated by a hammer

*From paper before the American Society of Municipal Improvements.

†Chief engineer, Dunn Wire-Cut Lug Brick Co.



In Columbia Park. Erecting Standard.
LIGHT STANDARDS MADE BY CITY OF PORTLAND, ORE.

survey of any cement grouted brick street laid on a sand cushion. The hollow spaces are readily located. These areas may be separated by solid areas where as yet the cushion has not left the pavement. The bond at these hollow spots may be intact and show no distress, but these areas become weak spots in an otherwise good pavement and eventually there may be a settling or a breaking of the cement bond.

It has also been claimed that a sand cushion prevents the crushing of the brick wearing surface under the weight of traffic.

Mere weight does not crush a grouted brick pavement laid on a solid foundation, provided it has a firm bearing or bed for the brick. If paving brick manufacturers cannot make a paving brick that will bear the crushing force of street and highway traffic, they had better stop making brick.

Again, in actual construction, while we may give elaborate directions as to how the sand cushion is to be rolled and struck with a template, we find that to obtain good results in the field is almost impossible, and we have an unstable layer of sand varying in compactness and thickness between a solid foundation and a solid wearing surface. There is also the hazard of the sand working up between the joints of the brick and thus weakening the bond when the pavement is grouted.

Again, a rolled wet sand cushion, if it dries out after the bricks have been laid, will undoubtedly shrink and then leave hollow spots under the wearing surface.

In view of all the hazards of using sand for the bedding course, engineers are beginning to turn to the use of a mixture of cement and sand. Mr. Compton, chairman and consulting engineer of the Baltimore Paving Commission, last year made laboratory tests of a cushion mixed 1 to 3, 1 to 5, 1 to 8, and 1 to 10, cement and sand and adopted for all brick paving work this year in Baltimore a cement sand bed mixed 1 cement to 5 sand. The sand and cement are thoroughly mixed dry and then handled the same as an ordinary sand cushion. The bricks are then laid, rolled and inspected, and the pavement wet down for grouting. This adds moisture to the cement-sand bed and eventually the cement-sand bed becomes hard and practically joins the brick wearing surface to the foundation. The rolling of the brick wearing surface is kept up even with the paver. This is an advantage, for if with a cement-sand bed the paving is rolled and not grouted and we have rain, no harm is done; in fact the rain will set up the cement-sand bed. On the other hand, there is always a hazard when it rains on brick laid on sand cushion and not grouted, as the sand is apt to come up in the joints from the wash, necessitating the relaying of sections of the paving. In Baltimore, Lexington street, from Calvert street to Liberty street, was paved with brick in 1906, on a 4-inch concrete base, using a ½-inch mortar cushion mixed 1 to 3. Mr. Compton states that this street stood up splendidly and that no complaint has ever been made as to noise. During the last three years the street has been all "shot" to pieces by sewers, gas, water, steam heating lines, etc., so that at present it is in bad shape from "cuts," but there were absolutely no failures caused by the original construction.

Another example of the durability of a grouted brick pavement laid on a cement-sand bed is furnished by the paved approaches to the Pennsylvania Railroad Terminal in New York City.

These approaches were paved in 1910, the bricks being laid on a cement-sand bed mixed 1 to 3. The pavement today shows no signs of deterioration except along the curbs where the wheels of heavy loaded wagons skidding down the inclines have cut into the bricks.

The theoretical type of construction is that developed by W. T. Blackburn, of Paris, Ill., consulting engineer of

the Dunn Wire-Cut Lug Brick Company, who, assisted by Mr. Parrish, a local contractor, is laying the brick wearing surface direct on the freshly laid concrete foundation. This form of construction is attracting considerable attention from paving engineers and considerable mileage has been specified for roads in Indiana and Illinois, and has been thoroughly explained in the various engineering journals. Mr. Blackburn's specifications for road work in Edgar County, Illinois, using this form of construction are as follows:

The foundation shall be four (4) inches in thickness, with its upper surface finished to four (4) inches below the grade of finished pavement, and covered over with a thin coating of sand and cement, after they have been first mixed dry, to the depth of three-sixteenths ($\frac{3}{16}$) of one inch. In placing the concrete, the operators shall be guided by a light wood template, resting on side forms, so made as to leave the concrete a little in excess of depth required. Over this shall be drawn a steel template consisting of a six (6) inch I-beam in front and a six (6) inch channel iron to the rear, placed in a frame two (2) feet on centers, supported by two (2) rollers at either end resting on the steel forms; the first section, or I-beam, should be three-sixteenths ($\frac{3}{16}$) of an inch lower than the channel iron, and cut the concrete base practically to a true surface four (4) inches below grade. In between these forms must be kept a sufficient amount of sand and cement, thoroughly mixed dry.

This rear template distributes this thin film of dry mortar over the surface of the base, leaving the surface entirely smooth. The template is one of the essentials of this type of pavement.

Upon this foundation and bedding course the bricks are laid in the usual method and are rolled with a hand roller weighing not less than twenty (20) pounds per inch of length. The rolling should be kept close to the laying and continued until the surface is smooth. At the end of the working period the brick laying, inspection, and rolling shall be completed with the limit of the finished base.

The advantages claimed in using the cement-sand bed or the new type of construction as developed by Mr. Blackburn are:

Elimination of the hazard of the sand cushion, as the pavement will not be injured at any time by rain, the wearing surface, with the exception of the filler, being completed each day. If a rainstorm intervenes no damage is done, as there is no sand cushion to become saturated and cause worry about rolling the brick surface.

Each brick in the wearing surface will be assured a cement bond its entire depth, for if the cement-sand should work up in the joints it will set up and prevent the shearing action which tends to crush the top of the brick.

There is no chance for the bed to shrink or shift away from the bottom of the brick wearing surface, as the brick is firmly bedded in the cement-sand or held in the mortar of the concrete base.

Where these pavements have been laid there seems to be a total absence of any rumble under traffic.

Slight settlements and breaking of bond due to non-uniformity of sand cushion are eliminated.

In reference to the use of cement-sand bed mixed 1 to 5, the increase in cost over a two-inch sand cushion will be from 5 to 6 cents per square yard, but Mr. Compton states that in Baltimore there has been no appreciable increase in cost to its use.

In county road work this type of construction eliminates the necessity of an edging, thus reducing the cost of the roadway.

Mr. Perkins suggests the use of 3½-inch or even 3-inch brick when laid on a mortar cushion, as saving considerably in cost and being equally as durable as 4-inch brick on a sand cushion.

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CHANGE OF ADDRESS

Subscribers are requested to notify us of changes of address, giving both old and new addresses.

Contributions suitable for this paper either in the form of special articles or of letters discussing municipal matters, are invited and paid for.

Subscribers desiring information concerning municipal matters are requested to call upon MUNICIPAL JOURNAL, which has unusual facilities for furnishing the same, and will do so gladly and without cost.

OCTOBER 28, 1915.

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Omission of Sand Cushions.

One of the most striking features in recent developments in connection with street paving is the omission of sand cushions under block pavements, in some cases as an experiment only, in others as a settled practice. This applies especially to brick and wood block pavements, but is suggested for stone block also. Some months ago we noted the tentative adoption in New York City of the practice of laying wood block on a mortar bed instead of a sand cushion, and it appears that a considerable number of cities have now adopted this as standard.

In the case of brick, however, it was claimed by some that a sand cushion was necessary to prevent a too great rigidity of the pavement, which would be caused by direct contact of brick with concrete foundation. In reply to this, it is claimed by many that a sand cushion, after it has been thoroughly compacted by rolling and the traffic on the pavement, is as rigid as concrete and that it is of no service whatever as an elastic cushion. A discussion of the relative advantages and disadvantages of sand cushion and mortar bed will be found in an article in this issue.

Wood block, and to a slightly less extent brick, can be made of precisely uniform depth, and theoretically might be laid directly upon a smooth concrete foundation without any cushion or mortar bed for taking up inequalities. In fact, they are laid in this way in certain European

cities. Granite blocks, however, cannot well be made with a variation of depth of less than half an inch, and some sort of material is necessary on top of the foundation which will yield sufficiently to permit bedding the blocks so as to bring all to an even surface. As it is also difficult to construct concrete foundations with less variation of surface than a half-inch, without taking greater pains, at corresponding cost, than is the present prevailing practice in this country, it would seem necessary to provide a bedding course of about one inch thickness. This can, of course, be made of a dry mixture of sand and cement, which could be set up after the blocks are bedded by applying water through the joints, and this construction is recommended by some.

One objection to the omission of the sand cushion which we do not remember having seen emphasized and yet which would seem to be quite important, is the bearing which it would have upon renewing the pavement or even making patches. If the mortar bed used sets up as strong as is claimed for it, it will be found, when the blocks are removed for any purpose, that a ridge projects from a quarter of an inch to an inch above the general surface at each joint. In relaying a block pavement on an old foundation of this kind, it would therefore be necessary to select blocks which would just fit into the old depressions between joint ridges (which would be impracticable, it appears to us); or else the entire foundation must be leveled off with fresh mortar to a surface above the joint ridges; or, as a third alternative, these ridges must be broken off with hammer and chisel. This problem will not probably present itself with any force for a number of years, and so may be overlooked in deciding upon this type of construction. In our opinion, however, it deserves the most careful consideration, for most paving engineers refer to the foundation as a permanent part of the pavement which should outlast several wearing surfaces.

Apportioning Municipal Expenditures.

Last week we referred editorially to the necessity of considering other matters besides health in apportioning municipal expenditures. The scientific way would be to determine carefully what percentage of the total expenditures should be used for each of the several classes into which such expenditures are divided, so as to secure the greatest benefit to the citizens obtainable with the money available. Such a critical analysis and philosophical apportionment is hardly to be expected, and under actual conditions may not be practicable; but a nearer approach to it can be made than the present entire lack of system, under which appropriations are made largely according to popular whims or private "pull" with city government.

Possibly the easiest method is to compare each city with the average of others. This fails to take account of local peculiarities, of periodic needs for reconstruction, etc., but may at least give an idea of general practice as a starting point. The latest census report covering this subject gives the average percentages of the total expenditures of all cities of more than 30,000 population as follows: Education, 20 per cent; highways, 16.5 per cent; public safety and protection (mostly fire and police), 12.9 per cent; water supply, 10.1 per cent; other public services, 3.7 per cent; sanitation (mostly sewerage and street cleaning), 7.6 per cent; general government, 6.8 per cent; charities, hospitals, etc., 4.2 per cent; recreation, 4 per cent; conservation of health (health department work), 1.2 per cent; miscellaneous, 1.9 per cent; interest on city debt, 11.1 per cent. Considering the cities grouped by sizes, we find these percentages fairly

uniform in most cases, the smaller cities having lower percentages for general government, charities, recreation, municipal enterprises, interest, and general; and higher percentages for education, highways, and sanitation.

These percentages could not, of course, be applied rigidly to any special case. But if a plea is made, for instance, that more than 3 per cent should be spent for sanitation, reference could be made to the average of 7.6 per cent as a supporting argument; or a general government which cost 15 per cent of the total expenditure of a city must show a reason for exceeding the average of 6.8 per cent or be considered unduly expensive. Similarly, a city which is using 25 per cent of its income to pay interest on bonds is in a worse financial condition than the average city, and that of the average city is none too good.

Comparisons such as these may serve as a check on extravagance or parsimony in the expenditures for any given item of the budget. They would probably be of value, however, only when the allotment was excessively large or small. A method can be employed which takes into account local conditions together with relative importance of results, but is practical, which we will consider next week.

VOTING MACHINES IN WISCONSIN.

Under the above title a bulletin has been issued by the University Extension Division of the University of Wisconsin, prepared by Ford H. MacGregor, which gives some interesting facts and figures. From this it appears that the use of voting machines began in Rochester, N. Y., in 1898, when the city purchased 73 machines. They are now used by many cities, large and small, in a number of states.

Their use in Wisconsin began in Milwaukee in 1902, when the city purchased 15 machines. That city now owns 153 machines, using them in all precincts. By the beginning of 1915, 13 of the 18 first, second and third-class cities of the state had purchased one or more machines, the total being 253. (Three of these cities, however, have not used the machines during the past few years.) In addition, Milwaukee County has 40 machines.

By the state law, no municipality can adopt a make of voting machine before it has been approved by the state voting machine commission.

The law requires that a machine, to be approved, must be so constructed that it cannot be tampered with or manipulated for fraudulent purposes; that during the process of voting no one can tell the number of votes received by any candidate; that the voter can vote a straight or split ticket, or for any candidate he chooses; that no elector can vote for more than one candidate for any office; that any voter can vote for or against any proposition or measure submitted; and that the names of president and vice-president of the presidential electors shall appear on the machine and can be voted for as a whole. Common councils in cities and county boards in counties having 150,000 population or over are authorized to adopt and purchase any machine approved by the voting machine commission, but village trustees and town boards can purchase them only after the proposition has been submitted to a popular vote at a regular election and received a majority vote.

The standard price of a 30-key machine f.o.b. Jamestown, N. Y., is \$600; that of a 40-key machine, \$650. The primary attachment costs \$50 additional.

ADVANTAGES AND DISADVANTAGES.

The chief advantages of the voting machine over the paper ballot, as advanced by those who favor its adoption, are:

1. The result of the election is known immediately upon the closing of the polls, it only being necessary for the election officials to unlock the back of the machine and take off the totals for each candidate; whereas with the paper ballot it frequently takes hours and sometimes days to count the votes.

2. The votes are registered and counted with mechanical accuracy and the danger of mistakes made in the count by tired election officials is avoided.

3. It is impossible for the voter to cast a defective ballot which must be thrown out by the election board, as frequently happens with the paper ballot. Ballots cannot be identified or mutilated by improper marking, nor can the voter vote for more than one candidate for the same office.

4. It reduces the cost of elections by reducing the number of election officials and the length of time they are required to serve, by reducing the number of precincts and consequently the rent paid for polling places, and by avoiding the necessity of recounts and expensive litigation, and the expense of printing large ballots.

5. It removes the temptation to corrupt voters, since the ballot is absolutely secret and the voter cannot identify his ballot for the purpose of selling his vote.

The main objections urged against the voting machines by those who are opposed to its use are:

1. The voter is prejudiced against using a machine because he cannot actually see his vote recorded and cannot be absolutely certain of how he voted.

2. The time which a voter can take to vote is limited and he sometimes becomes confused and does not vote as he intended to vote.

3. Voting machines are expensive and represent too heavy an investment for a city to make in something which is only used a few times a year.

4. Voting machines may be tampered with and "doctored" for fraudulent purposes, by using stickers or other devices so they will not record votes for certain candidates.

5. Ballots cast on a machine cannot be examined and recounted, and if anything goes wrong, it cannot be corrected except by a new election.

ESSENTIALS.

It is agreed that where voting machines are used certain essentials should be observed. A competent machinist should be selected by the city to have charge of the voting machines, to properly set and adjust them before each election in the presence of the election officials and representatives of the parties and candidates, and to lock and seal them. He should be given full instructions by the manufacturers and be able to instruct the election officials and voters in their use. The possibility of tampering with the machine contemplates the corrupting of the election officials; such a practice would be an added check against such a contingency.

New election officers should be called together before election and given full instructions in the use of the machines, and opening and canvassing the vote.

The machine should be delivered and displayed in the various precincts before election and the voters given every opportunity to familiarize themselves with its use; sample ballots should be printed showing the face of the machine and arrangements of the candidates; and voters who desire it, given proper instruction. Where polling booths are located in schoolhouses, and schoolhouses are used as social centers, it has been suggested that the voting machine be used by the children and by all meetings and gatherings whenever a vote on any subject or the election of officers takes place. In this way the entire community and the future generation would readily become familiar with its use.

BALTIMORE'S MUNICIPAL MARKETS.

The city of Baltimore last year maintained eleven public markets, under the supervision of the comptroller's department. The salaries of the assistant market masters in charge totaled \$6,400, varying from \$400 to \$900 per market. The market employes were paid \$4,932, four markets requiring none, while Center Market expended \$2,964 for this purpose. There was also charged to this market \$1,887.33 for miscellaneous expenses, \$2,581.63 for repairs and improvements (performed by the inspector of buildings department), \$1,351.17 for lighting (credited to the department of lamps and lighting), \$764 for salaries of market cleaners, and \$4,846.40 for cleaning streets surrounding the market and carting away the refuse (both credited to the department of street cleaning). The total expenditures for Center Market were \$14,994.53. The receipts from licenses, rents and per diems totaled \$15,478.19.

The totals for the eleven markets, in addition to the two given above, were: Miscellaneous expenses by comptroller's department, \$3,209.79; repairs and improvements, \$21,581.17; lighting, \$6,978.43; salaries of market cleaners, \$10,840; cleaning streets surrounding markets and carting refuse, \$31,537.48; scowing away refuse, \$6,005.75 (this was not segregated among the markets, and was credited to the department of street cleaning). The total expenses were \$91,484.62 and the total receipts from licenses, rents and per diems, \$75,390.72.

This shows a net loss of operation. It should be noted, however, that the expense items include several not charged against markets by most cities, such as cleaning streets and carting refuse. If this item alone were deducted, the loss would be changed to a profit. Figured as above, four of the markets show a net gain, seven a net loss. One market alone shows a loss of \$14,500, practically all of which was spent for repairs and improvements.

MUNICIPALLY MADE STREET SIGNS.

By H. M. WHITE.

A municipal sign writing bureau for the production by the city of all its street and other signs has been created by the city of Portland, Oregon, and found to be a financial success. A sign writer employed at \$3 a day is turning out all the signs required for streets, is lettering windows in municipal buildings, lettering automobiles and fire and police apparatus and making all the cloth banners and placards needed by the city. He has a well-fitted shop in the basement of the city hall.

Making of street signs is the principal part of his work, and he is kept busy at this at all times when he is not working on special signs. The street signs are laid aside when there is other work to be done.

The city is making a net saving of 9 cents on each street sign, according to figures compiled by city commissioner Dieck. The baked-enamel signs generally used cost 26½ cents each, delivered in Portland. In many cases delivery of new signs has not been possible in less than 10 days from the date of the order. The signs being made now cost 17½ cents each, counting the time of the signwriter and the cost of the iron blank upon which the sign is painted. The blanks cost 7½ cents each. (Old enamel signs with the enamel knocked off are used for new signs as far as possible.) When not interrupted by other work, the sign painter turns out between 35 and 40 of these signs a day. The body of the sign consists of two coats of white lead, on which the letters are fielded in with cobalt blue. The sign is then covered with two coats of varnish.

An investigation made recently showed that a large percentage of the enamel signs in Portland streets have been cracked or defaced by boys with stones. The signs which the city is producing now, being covered with paint and not baked enamel, can be hammered without cracking and so are not easily defaced.



SIGN PAINTING WORK DONE BY PORTLAND CITY BUREAU.
Easel at Which Painter Works in the Lower Left-Hand Corner.

The WEEK'S NEWS

Highway System of Maine—Street Repair Needs of Boston—Typhoid in Pennsylvania—Sewerage Plans for Washington—Metering in Duluth and Knoxville—Utility Litigation in Cincinnati, Medford and Youngstown—New Auto Apparatus—Memphis, Hibbing, Terre Haute and Nashville—Charters for Massachusetts Cities—Finances of Duluth and Pittsburgh.

ROADS AND PAVEMENTS

Maine's Proposed Road System.

Augusta, Me.—That the proposed state highway system of 1,300 miles as laid out by the Maine state highway commission reaches 73 per cent of the population of Maine and covers 73 per cent of the total valuation of the state is stated by Paul D. Sargent, chief engineer of the commission. This number of miles covers only 5 per cent of the total road mileage of the state, but so carefully has the commission worked out its problem that it runs through every city, every county seat and every principal town in Maine. Actually, it reaches 238 cities and towns of the something over 500 within the limits of the state. Chief Engineer Sargent announces that at the end of this season practically 200 miles of new state highway would be completed. Maine has expended since 1901 \$4,280,000 on state-aid roads. Beginning next year, it is planned to put all state highways, both improved and unimproved, under the patrol system, a force of about 500 patrolmen covering every section of Maine, being kept constantly on the highways from April until late in the fall, maintaining them in the best possible condition. At the present time the plan has been to keep patrolmen only on the sections built, a force of 25 only having been employed this year.

Designs for Grade Crossing Elimination.

Newark, N. J.—Plans submitted by the Lackawanna Railroad for the elimination of two grade crossings in the Wyoming section have been accepted by the Millburn township committee. The plans carry out the suggestions made by the township authorities two years ago except as regards the Wyoming avenue crossing. The committee had thought of depressing the tracks, but the railroad favored the erection of a bridge as a more economical and equally advantageous arrangement, which the committee thought was satisfactory. The expense to the railroad of the improvements will reach as high as \$70,000, it was stated. No idea was given as to the expense to the township. Features of the railroad plans are that there will not have to be a single change in the present grade of the tracks and also that it will not be necessary to condemn any land in connection with the work. For any damages to abutting property which will arise from the raising of the grade of Wyoming avenue, for instance, will be borne equally by the township and railroad, the agreement provides. The township will not be expected to pay any part of the cost of the erection of bridges. Mr. Johnston, for the railroad, stated that, owing to the lateness of the season, it will not be feasible to start the work this year, but added that it was his belief that work would be started as early in the spring as is possible. The Wyoming avenue and Cypress street bridges will be of concrete. The committee has been working on plans for the abolition of the crossing since 1913. The upper illustration shows the proposed Wyoming avenue viaduct, and the lower the bridge over Cypress avenue.

City Indicted for Bad Roads.

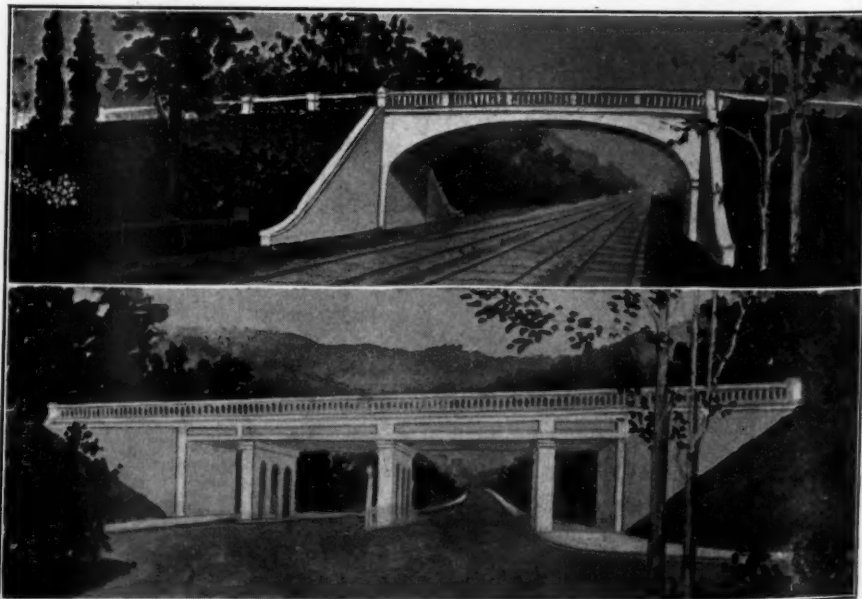
Newport, Ky.—The grand jury has indicted the city of Newport as a municipal corporation for maintaining a common nuisance in permitting the Newport, Licking and Alexandria turnpikes, within the corporate limits, to remain in a condition unfit for public travel.

No Referendum on Street Work.

Sacramento, Cal.—A decision of state-wide importance has been handed down by the third district appellate court to the effect that proceedings in street improvement work are not subject to the initiative and referendum. In writing the decision which was made on rehearing of the case of Edwin M. Chase v. F. J. Kalber, town clerk of Rio Vista, Justice Hart changed his views. His first decision in the case was that the proceedings are subject to the initiative and referendum. In his last opinion, Justice Hart emphasizes that, were street improvement proceedings subject to the initiative and referendum, a bond issue for street work could be held up, street work and other municipal activities would be demoralized. It is pointed out that the persons directly concerned in street improvement are the owners of property along the street, and not the entire community, and if they desire to have the street improved, no power should be given by which the rest of the city could stop the work. If property owners do not desire a street to be improved, there is a provision in the law by which they can hold up the proposed improvement for a period of six months.

\$10,000,000 for Boston Street Repairs.

Boston, Mass.—In an exhaustive report by the finance commission to the mayor and the city council it is stated that approximately \$10,000,000 must be spent in a period of five years for the repair of streets. The conditions are due, according to the report, to the decreased efficiency in the supervising and labor forces of the public works department and the methods employed by the street railway companies in paving the portions of the highways under their care. At least \$3,000,000 of the estimated expense is in excess of



Courtesy, Newark (N. J.) Evening News.

TWO GRADE CROSSING ELIMINATION PLANS.

what would be spent in the five years if the appropriations were made according to the present yearly expenditures. About \$1,000,000 must be used for putting into proper condition the paving between the street car tracks. The other \$2,000,000 should be appropriated from the tax levy at the rate of \$400,000 a year. The investigation for the finance commission was made by Guy C. Emerson, its engineer, who was superintendent of streets under former Mayor Hibbard. The finance commission recommends:

1. That, after the report of the public service commission covering the responsibility of street railway companies in the matter of street pavements is acted upon by the legislature, the city of Boston and the railway companies should cooperate to place the streets in proper condition at the least possible expense.
2. That in the business portion of the city the more recently developed type of smooth granite paving should be used.
3. That a larger amount of the different varieties of asphalt pavements be used in place of the more expensive wood block pavements now being used.
4. That the thoroughfare still used for residence purposes be paved with some form of asphalt pavement.
5. That the average appropriation for the paving service be increased out of the tax levy by approximately \$400,000 a year, commencing with 1916.

SEWERAGE AND SANITATION

Nurses Are Made Sanitary Police.

Cleveland, O.—Sixty city nurse graduates are to take over all branches of sanitary police service now attended to by the force of men working under the general direction of Dr. Martin Friedrich, chief of the bureau of communicable diseases. The change will be made under a reorganization scheme announced by Dr. C. E. Ford, commissioner of health. The scheme contemplates handling of general social service problems through the same agency. By centralization of the force, Dr. Ford hopes to bring about the establishment of such small districts that individual work can be done among families in the congested districts. The plan is being tested. A corps of nurses in the central section of the city known as District 1 is attending to house placarding for contagious diseases along with its other duties. The six nurses in this district are tacking up signs and are attending to their removal when the quarantine has been lifted in each case. The few men in the communicable disease branch of the service will be called upon when actual police service is necessary and for special patrol duty.

The Typhoid Harvest in Pennsylvania.

Philadelphia, Pa.—Men only are affected by typhoid fever in the congested wards of the city, where the disease is more prevalent than usual. So far not a woman or a girl has been stricken. Since September 2 there have been 247 cases, with 16 deaths, in the city. Typhoid began to develop rapidly in the congested second, third and fourth wards six weeks ago. Case after case was reported of men suffering from the malady, but not a single woman was stricken. Chief Vogelson, in his efforts to trace the source of the disease, instructed inspectors to try especially to learn why only men were affected. They discovered a variety of causes of the disease, among them unsanitary and ill-kept milk. Health officials say there is a wave of typhoid fever passing over the eastern part of the state. Its effect in this city became noticeable in the week of September 4. The greatest increase was in the second ward, from which the disease spread to the third and fourth wards.

Shippensburg, Pa.—Ten more of the suspected typhoid fever cases in Shippensburg have developed, and there are 79 typhoid patients now under treatment. Everything possible is being done by the state health authorities, aided by the local authorities, to stay the spread of the disease. The town is under quarantine so far as contact with the typhoid cases is concerned, and numerous vaccinations for typhoid have been made.

Shavertown, Pa.—Two more cases of typhoid fever have appeared in the epidemic at Shavertown. At present there are 8 other cases confined at the West Side Hospital. The source of the epidemic is still unknown. Dr. Charles Miner, medical representative of the state department, announced that although exhaustive investigations of the milk and

water supply for Shavertown families had been made, nothing was ready yet for public announcement.

Johnstown, Pa.—Records of the bureau of health office show that the number of typhoid fever cases in Johnstown, including ones from beyond the city limits who are receiving treatment in local hospitals, number more than 40, and with at least 8 cases reported by physicians as "suspicious" the total appears to be at least 50. State Commissioner of Health Samuel G. Dixon has advised the boiling of water and sterilizing of milk. Dr. B. Franklin Royer, chief state medical inspector, and his staff are working on data about the watershed that might have a bearing on the epidemic. Milk dealers have been instructed not to leave bottles, or to collect ones previously left, at homes where there is typhoid.

Lewistown, Pa.—Considerable alarm is experienced from the outbreak of typhoid fever in the sixth ward, there being now at least 9 cases. Nearly all the fully developed typhoid cases and suspects are closely grouped on the same side of one street. Investigation discovered that the sewer along this street is clogged and Street Commissioner A. A. Aurand was instructed by the council to have the sewer cleaned without delay. Health Officer John C. Clinger made a careful inspection of the alleys in that part of the town and found one of them in a very unsanitary condition. There is also considerable dumping of garbage, dead animals and decaying fruits along the creek bank near the homes of the typhoid patients.

Diphtheria Closes Memphis Schools.

Memphis, Tenn.—All city public schools in Memphis were closed for a few days on account of an epidemic of diphtheria. There are 24,000 school children in the city, and 125 cases of the disease reported.

More Typhoid.

Decatur, Ind.—An epidemic of typhoid has broken out near Pleasant Mills and Rivarre, five miles east of this city, and fifteen cases have been reported. Several of the cases are serious. Examination of the water and milk used is to be made by the state chemist.

Proposes Utilization of Sewage.

Washington, D. C.—Utilization of the waste material that now is poured annually into the Potomac river from Washington is recommended by Asa E. Phillips, superintendent of the District sewer department, in his annual report to the commissioners. With the statement that 12,000,000 gallons of untreated sewage was discharged into the Potomac from the District last year, Mr. Phillips declares that it is not too soon to begin preparation of plans for sewage treatment works for the removal and utilization of such material in the future. Already a preliminary study for the proposed plant has been made, but, according to the sewer department official, several years will be required for complete development of the plans. It is important, however, he points out, that a suitable area of sufficient size for the sewage treatment works be obtained without delay. The present condition of Potomac water, as compared with conditions elsewhere, is exceptionally good, Mr. Phillips states. Examinations of the river bottom showed no evidence of sludge deposits for a distance of 60 miles below the sewerage outlets, while the shores and beaches were free from any objectionable conditions. Mr. Phillips again calls attention to the serious condition facing the District in the pollution of local streams with sewage from nearby Maryland points, and in this connection states that a comprehensive report, advising the creation of a sanitary district and providing for measures of relief in co-operation with the District of Columbia, was submitted to the state legislature at its session, January, 1914, but no legislative action was taken on this report. It is considered advisable, he says, that legislative authority be obtained from Congress authorizing the commissioners of the District of Columbia to enter into agreement with the state authorities to secure the abatement of these conditions, which within a comparatively short period, it is believed, will become sufficiently serious to constitute a nuisance.

Legislation Against Typhoid Carriers.

Madison, Wis.—Several cities of the state are contemplating the adoption of an ordinance prohibiting suspected "typhoid carriers" from handling milk or milking utensils. The cities of Columbus and Grantsburg, where typhoid carriers have been located in the past, have asked the state board of health for information on the probable terms that such an ordinance should contain. A tentative ordinance has been drafted and submitted to the attorney general for an opinion as to its legality. The proposed ordinance provides that it shall be unlawful for any person who has recently suffered from typhoid fever or diphtheria, or who is suspected of being a typhoid or diphtheria carrier, to milk cows, wash or care for milk utensils, or handle in any manner milk or cream sold or offered for sale until repeated examinations of such individuals have proved that he or she is not a carrier of such disease.

WATER SUPPLY

New Reservoir Completed.

Salt Lake City, Utah.—Water has been turned into the new reservoir in Pleasant Valley, City Creek Canyon, on the completion of construction work on the basin by P. J. Moran, the contractor. The reservoir has a capacity of about 6,000,000 gallons and cost the city about \$18,500. It is designed to store flood waters of the creek during the winter and spring months for use in the city system during the low water season of summer.

City Buying Meters from Consumers.

Duluth, Minn.—More than half of the water meters now in use have been purchased from the consumers by the water and light department. Manager D. A. Reed, of the department has announced that a total of \$20,036.64 has been credited to the water accounts of water consumers, who have accepted the city's offer for the gas meters. No cash is paid out for the meters, but the amount is credited against the consumer's gas or water account, the consumer making the choice. It is estimated that the remaining water meters will cost approximately \$20,000, bringing the total expense up to \$50,000.

City Wins Suit Against Contractor.

Cleveland, O.—Supreme court has affirmed judgment of Cuyahoga county court of appeals and given the city of Cleveland \$234,302 judgment against W. J. Gawne, contractor on old east side waterworks tunnels. Gawne, on August 26, 1896 got a contract for five miles of waterworks tunnels under the bed of Lake Erie. On October 1, 1901, the city took the contract away from Gawne and started to finish the job itself, alleging Gawne had failed to comply with contract specifications. Gawne sued for total damages of \$123,147. The city set up a counter claim of \$442,065. Lower courts gave the city judgment for \$234,802. Supreme court affirmed this.

All Metering for Knoxville.

Knoxville, Tenn.—Every water service in the city is to be metered as soon as possible. At present only 48 per cent of the water users are paying according to the amount of water used. "This is unbusinesslike and tends to decrease the efficiency of the system as a whole," states Commissioner J. G. Crumbliss. This is in accordance with recommendations made by D. H. Maury, hydraulic engineer, of Birmingham, after an investigation in connection with the proposed \$500,000 bond issue for improvements. Mr. Maury showed a great per cent of waste. No new water service will be installed without meters, which is in accord with a recent ruling of the commission of the water plant, and as soon as possible the department will install meters on all open connections. Eleven hundred meters have been purchased by the city for this purpose. Knoxville has 130 miles of mains. This is exclusive of the service pipes connecting the 13,000 users of water to the large mains. These 13,000 users are consuming about 7,500,000 gallons of water per day, a third more water than should be used by a city the size of Knoxville, it is calculated.

STREET LIGHTING AND POWER

Finish Cincinnati's Rate Hearing.

Cincinnati, O.—At the close of the final session of the hearing before the public utilities commission at Columbus on the valuation of the electrical plant and equipment of the Union Gas and Electric Company of Cincinnati, L. G. White, the commission's appraisal expert, submitted a supplemental report revising his original estimate on a number of important items of the company's property. White's revision grants the city deductions from present values of these items totaling \$396,312, but allows the company increases totaling \$402,893. His original estimate of the present value of the company's electrical property is reduced from \$8,451,579 to \$8,401,978. The commission informed both sides that should they desire it a chance would be granted for protests before a final decision on the valuation is announced. The session was devoted to rebuttal by the company of statements made by the city's representatives. President W. W. Freeman, of the company, took the stand to elaborate his contention that depreciation should not be deducted for rate making purposes. He declared that it should not make any difference how old a machine is so long as it gives first-class service. Only when its service is impaired should allowance for depreciation be permitted, he insisted. The principal witnesses for the city were A. G. King, an expert, G. F. Mansell, an expert accountant, and some builders and real estate men who testified that the company's valuation was too high.

City Must Sell Plant to Company.

Medford, Ore.—The city of Medford lost its case against the California-Oregon Power Company in the United States district court at Portland. Judge Wolverton rendered a decision under which the power company will be allowed to purchase the city's electric power plant for \$20,000 and to continue its contract to furnish power. The amount of \$17,606 owed by the city to the company for power already furnished will apply on the purchase price. The case grew out of a contract which was entered into by the city council, on a vote of the people, June 7, 1907. The contract gave the company a 25-year lease of the plant, with the right to purchase and the city merely retained the privilege of repurchasing. The ground on which the city asked that the contract be declared void was that the city charter contained a clause preventing the council from entering into public utilities contracts extending over a term of more than 10 years. Judge Wolverton held that the city council had deliberately tried to get around this clause, and as the company had faithfully performed its part of the contract it should be allowed to go ahead and purchase the plant.

Report on Columbus Light Plant.

Columbus, O.—Mayor Karb has sent to council the report on the extension of the municipal light plant which Commissioner Ballard of the Cleveland light plant made to him on July 23 and which the mayor had suppressed until he used part of it in a campaign speech. Three councilmen had resolutions prepared demanding that the mayor surrender the report to council, and also calling upon him for an explanation as to why he had suppressed it. The report of Ballard says that for \$265,000, the amount of bonds voted by the people, the mayor could extend the plant so that it would have a capacity in generators for lighting about 10,000 homes in the city, and a new pole line equipment to serve 1,000 homes immediately. This equipment would also give the plant a reserve equipment to fall back on in case of a breakdown of any of its present generators. This new generating equipment would include, Ballard says, a 4,000 kilowatt turbine, and two 500 horsepower boilers. Ballard checked over the estimates made by Herman Gamper and Professor W. C. McCracken, of the Ohio State University. In regard to the Cleveland plant, which is selling current at from three to five cents a kilowatt hour, Ballard says: "In our Cleveland plant, which is not yet loaded to one-half its capacity, we are even now making enough profit from the sales of current for commercial purposes to pay all the interest on our bonds and

set aside a sinking fund for the redemption of these bonds as they mature." A copy of the report will be turned over to City Solicitor Scarlett to use in his fight for a low light rate before the state utilities commission.

Gas Referendum Case Lost.

Youngstown, O.—The gas franchise will not go to a referendum vote, according to a decision announced by Common Pleas Judge W. P. Barnum, who dismissed the petition for a writ of mandamus to force City Auditor Dan J. Jones to put the franchise on the ballot at the November election. Judge Barnum held that those who were asking for the mandamus writ, had failed to comply with the law because they did not first notify the city solicitor in writing and ask him to bring the suit. Judge Barnum announced further that if the plaintiffs should attempt to rectify this error by notifying the solicitor and recommending the suit, he would hold against them on the ground that there were not enough legal signatures to the petition asking for a referendum and that the city auditor had the right to determine this question. The court held that all signatures not written in ink or indelible pencil were void, that all names signed by a person other than the person whose name appeared on the petition were void, even when the person had indicated his approval by a mark, and that all signatures that did not have a complete address, date and ward and precinct designation could not be considered. He said that the addresses and precincts might be written in later, but they must be filled in before the petitions were filed. This ruled out about 700 names and in addition the court threw out seven petitions that had been filed with Mr. Jones at his house after office hours on the last day for filing the petitions. This cut off about 15 per cent of the signatures to the entire petition.

Regulating Heating Service.

Indianapolis, Ind.—The public service commission has entered an order requiring the Merchants' Heat & Light Co. to predicate its first bills for the ensuing heat year on a basis of the radiation actually placed in homes supplied with such heat. Tests are to be provided for by the order of the commission, which will show, under the rules laid down by the body, the required number of square feet of radiation necessary in each building supplied with the heat and these tests will form the basis of the charges made against patrons by the company. The order follows many complaints from customers against a policy formerly adopted by the company by which it estimated the required radiation in each building supplied with the hot-water heat and applied the rate of 20 cents a square foot of radiation thereto. Customers complained that their annual bills were raised many dollars by this method of applying the rules of the commission. Commissioners, explaining the order, said the rule for estimating the needed radiation hereafter would be applied only in cases where the heat is to be installed for the first time, or in new buildings, while the rule for determining the needed radiation will be in effect in all other cases. The tests require that the radiation needed shall be sufficient to keep the temperature in a building at 70 degrees Fahrenheit, when the temperature outside is zero. To maintain this standard the company must supply water heated to such a temperature that a drop of approximately 30 degrees shall result between the time the water enters a building and the time it leaves the building. A pressure of 6 pounds a square foot an hour is required by the tests.

Further Development of Niagara.

Toronto, Ont.—It is authoritatively announced that plans for power development that will make the Hydro-Electric Power Commission of Ontario independent of all private developments and provide a supply sufficient not only for the next few years but for many years to come have been given final approval by the commission and sent on to the provincial government. As outlined by Sir Adam Beck at London several months ago upon the opening of the first hydro-radial car line in the province, the plans call for an initial development of 100,000 horsepower by utilizing the

maximum head of power on the Niagara river, now undeveloped. The plans, it is understood, outline a possible supply from this source of 250,000 horsepower and cover, as well, developments possible from the utilization of the Welland canal spillways, which will add as much to the power supply of Ontario. The plans are the result of over a year's work by the engineers of the commission and for the guidance of the government have been completed in great detail, with careful estimates of cost and production. The construction of a great development plant in the Niagara district has become an urgent necessity by the rapid growth of the cheap power system in Ontario. Sir Adam Beck and his colleagues on the commission are facing the end of their present sources of supply. The 100,000 horsepower supply contracted for with the Ontario Power Company at the Falls will soon be exhausted by the increasing demands of the municipalities, which even the big increase in the supply from new plants here and there in the province will not meet. With the advent of hydro-radial (or rural) car lines on an important scale, the present supply will fall far short, and when that time arrives the commission must be in a position to furnish practically unlimited power.

FIRE AND POLICE

Three Firemen Killed in Warehouse Fire.

Richmond, Va.—A fire on "Fire Prevention Day" in the Carcy street warehouse district was extinguished only after the death of three firemen and a property loss of \$400,000. The dead are Captain R. M. Normant and Firemen C. L. Atkinson and W. R. Odell of Engine Company No. 1. The three, together with two others, were pinned by falling walls. The day after the blaze twenty firemen were still working pulling down the dangerous ruined walls and extinguishing smouldering debris. As there is no provision for pensions, council is to help the families of the dead men, and a fund is also being started for them.

New Fire Alarm in Operation.

Westport, Conn.—The installation of the new Loper fire alarm system has been completed and tested to the satisfaction of the fire alarm committee and the board of selectmen. The town is divided into 59 sections and there are 59 signal wheels in the sending apparatus which is located at the Southern New England telephone exchange, but should the town need more 71 more could be added. Each wheel is numbered differently. A small bell indicates the number that sounds and in case of a storm and crossed wires the bell rings the box and the trouble is easily ascertained. The sending apparatus is in the city hall and consists of two large air tanks, a Wagner single-phase induction motor and an automatic governor. There is a pressure of 115 pounds in the air tank, with a larger tank of storage air, and when the pressure goes below 105 pounds the automatic governor starts and stops the 5-horsepower motor which pumps air into the tanks.

MOTOR VEHICLES

Firemen Lament Motorization.

Woburn, Mass.—As a silent, but expressive, protest against the changes in the fire department, the doors of Hose No. 3 house were decorated with long streamers of crape. By the terms of the change in equipment leading to the motorization of the department, 31 men were retired and five houses locked up after stripping them of the accumulations of the years.

Motorize All Ambulances.

New York, N. Y.—Motor ambulances have replaced the horse-drawn vehicles at all the city hospitals in Manhattan and the Bronx. Efficiency and economy are the objects of the change. It is expected that territory may be covered more speedily with the automobile ambulances and with fewer of them. The horses will be transferred to more easy work or none at all at the city's inebriate farm at Warwick, N. Y. Other work will be found for some of the oldest drivers who are not chauffeurs.

New Aerial in Service.

Utica, N. Y.—The new aerial motor truck, after excellent tests of speed and quick raising under the direction of Captain G. J. Vogt, was accepted. It is now in service.

Hook and Ladder Installed.

Albion, N. Y.—The new \$3,600 55-foot aerial hook and ladder truck recently purchased by the village from the American-LaFrance Fire Engine Company, of Elmira, has been demonstrated, accepted by the village trustees and installed at fire department headquarters.

Combination Hose and Chemical Ordered.

Lewistown, Pa.—The Brooklyn Fire Company has ordered a new Thomas combination hose and chemical. The truck has a 80-h.p. motor and carries about 600 feet of hose. It will hold 20 firemen. Other companies in the city are considering the need of new auto apparatus.

Buys Two Fire Trucks.

Malden, Mass.—Following criticism because of the inadequacy of the fire department, and the cutting off of one section from insurance by the underwriters, a decision has been reached to spend \$10,950 for two pieces of new apparatus. The city council wanted to buy about \$35,000 worth more, and since the first of the year there has been a deadlock between a majority of its members and the mayor. Now a contract has been made with the Seagrave Company of Columbus, O., for a combination truck and a service truck, to be delivered within three months.

Buys Fire Autos to Cut Insurance Rates.

Cleburne, Tex.—The city council has ordered the purchase of two modern fire-fighting trucks to cost \$9,400. There will be a hook and ladder and chemical six-cylinder truck and a hose and chemical six-cylinder truck. The purchase was made from the American-LaFrance Fire Engine Company of Elmira, N. Y., and delivery of the machines must be made not later than December 29. The city will also purchase an auto for the chief and is figuring on purchasing a triple combination hose, chemical and pumper. The purchase of the new machines will cut the fire insurance rate from 35 cents to 32 cents.

Complete Motorization for Newport.

Newport, R. I.—The fire department is now completely motorized and no horse is now left in service. The apparatus consists of two ladder trucks, three combination pumping engine and hose wagons, four chemical and hose wagons, two reserve steamers, one utility truck, one service wagon with water gun and deluge set, one chief's car and one deputy chief's car. The accompanying illustration shows one of the ladder trucks recently installed.

Nine New Fire Autos for New York.

New York, N. Y.—Three new engines and six hook and ladder trucks of a type never used in this city before have been added to the fire department motor apparatus. The new apparatus will be able to cover an area which would require three times as many horse-drawn companies to cover. Most of the new machines are distributed among nine new companies, including those which have supplanted volunteer fire companies in Whitestone, Long Island, and New Dorp, Staten Island; the others having been formed for additional protection in Manhattan, Brooklyn and Queens. The new trucks are city service hook and ladder trucks, the limit of the extension being fifty feet, which is sufficient to meet requirements in the sections to which they will be assigned permanently. The new model is equipped with a forty-gallon chemical tank and 300 feet of hose. To organize the new companies it was necessary to furnish equipment for fifteen men in each case.

GOVERNMENT AND FINANCE

Suit to Oust Memphis Officials.

Memphis, Tenn.—Attorney General Thompson has filed in chancery court here a suit to oust from office R. H. Crump, mayor of Memphis; R. A. Utley, vice-mayor and fire and police commissioner; W. M. Stanton, city judge; O. H. Perry, inspector of police, and J. A. Riechman, county sheriff, for alleged failure to enforce prohibition laws. Under the law the defendants have 20 days to file an answer. A similar suit, filed several weeks ago by ten citizens, was dismissed on application of the attorney for the relators. The former bill did not contain the names of the sheriff and city judge.

More Litigation in Hibbing.

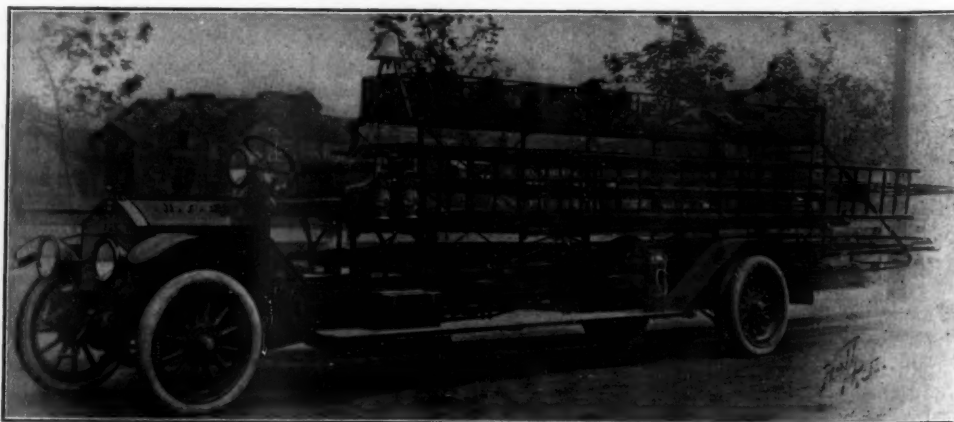
Hibbing, Minn.—Another step to check alleged extravagance on the part of Hibbing's municipal government was taken when eight taxpayers of the village served notice on the council and the E. W. Coons Contracting Company that any claims allowed for paving Third avenue and for work on the Penobscot conduit, will be contested and appeals taken to the district court. It was stated by city officials, however, that no attention will be paid to the notice and that the work on the two improvements to which objections are made, will be carried on by the contractor until they are complete.

Mayor Gossom Reinstated.

Terre Haute, Ind.—The 6-to-3 vote of the city council by which Mayor James M. Gossom was declared impeached has been held illegal by Judge Charles L. Pulliam, in circuit court, to which Gossom had appealed. Gossom by the decision continues as mayor of the city, which office he has held pending appeal since the ouster vote of the council. He was tried before the council on 32 charges, including immorality, drunkenness and election corruption. Attorneys for the mayor contended that the vote was illegal in that the vote was not a two-thirds majority of the council of ten members. The council's attorney contended that with nine members present, as was the case, the vote constituted the required majority. Judge Pulliam said there could be no doubt that the impeachment was illegal, but that the main question was whether the court had the right to consider the methods by which the decision was reached. He believed the court had that right, he said. The council may appeal.

Decides Against Recall Election.

Nashville, Tenn.—The court of civil appeals has handed down a verdict in which Judge Matthews, of the Davidson county circuit court, is reversed in his mandamus compelling the county board of elections to hold a recall election. The court held that the recall petition was void, for the reason that it was filed jointly against all five commissioners, one of whom, Andrews, had been removed from office at the time of the filing of the petition, and two of them, Alexander and Wilkerson, were not subject



Courtesy, Newport (R. I.) News.

NEWPORT'S NEW FIRE TRUCK.

to recall because not elected by the people under the present charter. "Justice and fair dealing," said the court, "towards the officials against whom the recall is aimed required that separate and individual petitions be filed against them, in order that their cases might be separately considered by the voters when asked to sign the recall." The decision of the court was by a vote of three to two.

The hearings of the city hall scandals continue. Commissioner of Streets G. W. Stainback, and former member of the board of public works, admitted he had heard of alleged corruption of a sub-official in 1913, had investigated, but that was all. Witness denied he had ever used city employees to work for him in elections. He asserted he did not know how other city departments are conducted, nor did he know how ad valorem taxes are assessed. He admitted, in face of city's financial distress, he and other commissioners have made reductions in property assessments. He said the board made reductions without expert real estate testimony.

Smaller Council Constitutional.

Elizabeth, N. J.—The fight to give the city of Elizabeth a city council of 12 members in place of the present body of 24 members has been won by the small council advocates, Justice Garrison having filed in the supreme court at Trenton an opinion holding the act of April 9, 1913, providing for the smaller council, to be constitutional. The decision allows a peremptory writ of mandamus directing County Clerk James C. Calvert to give effect to the act by printing the ballots for the election on November 2 without the names of any candidates for council thereon except to fill one vacancy occasioned by death. Justice Garrison shows that in legislation relating solely to the structure and machinery of government, cities may be classified upon the basis of their population according to the discretion of the legislature. If such sub-classification is based upon a substantial criterion, germane to the subject of legislation and hence not illusory, the circumstance that such legislation is limited to cities of a certain population will not render it unconstitutional, provided it relate solely to the structure and machinery of government.

Seven Massachusetts Cities Want Charter Changes.

Boston, Mass.—Lynn, Cambridge, Everett, Salem and Taunton have expressed their desire to change their forms of government to plan B, as outlined in the "act to simplify revision of city charters," and in each city there have been more than 10 per cent. of the registered vote at the last state election in the signatures of certified legal voters to each petition. The question of acceptance of that form of city government will be placed upon the official ballot at the coming state election in the respective cities. Plan B provides for a mayor to serve for two years, a city council of eleven, one councillor to be elected at large and to serve for two years, the mayor to have the veto power. The salary of the mayor is to be fixed by the city council and may not exceed \$5,000; the compensation of each councillor may be \$500 but not more. Voters of Revere desire to change their city charter to the form of government outlined in plan A, which provides for a mayor and council of nine members, all of whom are to be elected at large. Melrose has a petition for the change of its charter and the acceptance of plan B, but there have been some conflicting opinions regarding the number of signatures required.

Finances of Duluth.

Duluth, Minn.—Duluth's total bonded debt is \$5,974,000, according to an official statement prepared by Commissioner Voss, finance head. Commissioner Voss' statement shows that a total of \$181,000 in bonds was retired during the last year, while \$140,000 special assessment bonds and \$50,000 park bonds were issued since Jan. 1 last. There is still a total of \$2,175,000 in general bonds, \$421,000 in special assessment bonds, and \$3,378,000 in water and light bonds, outstanding against the city, according to the statement. Although \$16,000 in general bonds were retired on May 1 and a \$5,000 block of the \$185,000 issue maturing Sept. 1, 1918, was purchased last month by the finance head,

the balance of \$2,146,000 on Dec. 31 last has been increased, because of the special park issue on Jan. 1. The special assessment bonds on the first of the year totaled \$424,000 and on Oct. 1 the city retired \$143,000, but issued \$140,000 of the certificates which mature in three years. This makes a reduction of \$3,000 since Jan. 1. The water and light bonds have been reduced during the year from \$3,401,000 to \$3,378,000 by the retirement of \$20,000 on Sept. 1 and the purchase of \$3,000 last month out of the \$955,000 issue, which does not mature until April 1, 1928. There are no more bonds to be retired this year, so that the present balance of \$5,974,000 will remain until the beginning of the new year, unless a special issue is authorized for the proposed incinerator plant.

Pittsburgh's New Bond Issue.

Pittsburgh, Pa.—City Controller E. S. Morrow has sold \$2,668,000 worth of bonds of the city of Pittsburgh at a premium of 1.183 per cent. They were taken by a syndicate composed of the Mellon National Bank and Union Trust Company of Pittsburgh and Harris, Forbes & Co. of New York. The bonds were issued to fund floating indebtedness and bear 4½ per cent interest. Their ready sale at a premium is considered by the controller a conclusive answer to outside criticisms of the financial condition of the city. Mr. Morrow states that Pittsburgh's percentage of indebtedness is only 4.51 per cent of its valuation, and it is allowed to incur debt to the amount of 7 per cent. Twenty-six per cent of the city's revenue goes to take care of the debt. Mr. Morrow made an estimate and found that there is still \$1,647,555.87 of floating indebtedness unfunded. This cannot be funded in the immediate future on account of requirements of the laws relating to contracts, it being provided that two years must elapse from the time of making the final estimate until the debts fall due and any judgment can be taken. In due course of time this debt also will likely be taken care of by a bond issue.

MISCELLANEOUS

Three Towns Want Same Name.

Pittsburgh, Pa.—The Allegheny County Grand Jury has granted to the borough of Turtle Creek permission to change its name to Westinghouse, in honor of the late George Westinghouse. Wilmerding and East Pittsburgh had also asked the same thing, but the jury refused their requests. Judge Brown suggested to the counsel of the several petitioners that it might be possible to incorporate the three boroughs into a third-class city in honor of Mr. Westinghouse.

Canadian Towns Want Joint Utilities.

Windsor, Ont.—Representatives of the municipal councils of Windsor, Walkerville and Sandwich have asked the Ontario government for special legislation for the formation of a metropolitan commission to take charge of the street railway questions, water works, sewers and the hydro-electric systems of each of the border municipalities. A joint committee responsible for the resolution was formed at the beginning of the year to investigate street railway problems. If the special legislation is granted by the Ontario government, the question of a joint waterworks system will be the first consideration. The report of the waterways commission that the Detroit river was a polluted source for a supply of water for domestic use will bring up the question of whether the border cities will decide on a joint water system or the construction of a new sewer system. Engineers of the town of Ojibway have been working for months on plans for a water supply. The fact that the sewage of Windsor, Sandwich and Walkerville empties into the river above the new town makes it impossible for the engineers to consider a source of supply from the river. Installation of sewage disposal system by the other municipalities or the tapping of Lake St. Clair for pure water are the two plans to be considered by a metropolitan commission if one is created.

LEGAL NEWS

A Summary and Notes of Recent Decisions— Rulings of Interest to Municipalities

Defects in Streets—Care Required.

Short v. City of Carbondale.—The duty in respect to streets which the law imposes upon a municipality is only to exercise ordinary care to see that they are safe for travelers, and a municipality is not bound to maintain a street in condition for travel in its entire width.—Supreme Court of Pennsylvania, 95 A. R., 254.

Police Officers—Resignation—Withdrawal of Resignation.

Dostie v. Board of Mayor and Aldermen of City of Lewiston.—Where the board of mayor and aldermen of Lewiston allowed petitioner, who had been suspended from the police force pending action on his case as provided by Priv. & Sp. Laws 1878-80, c. 293, § 1, to withdraw a resignation which he had tendered and then proceeded to discharge him from the force, the board can take no advantage of the resignation.—Supreme Judicial Court of Maine, 95 A. R., 353.

Vacation of Plat—Consent of Lot Owners.

Clark v. Rain.—Where, under the facts in this case, a subdivision of land has been platted into lots, blocks, streets and alleys, and a portion of the lots have been sold, a part of such addition cannot be vacated, under § 924, Comp. Laws 1909 (§ 522, Rev. Laws 1910), without all the owners of lots in such plat joining in the execution of a written instrument, as provided by § 923, Comp. Laws 1909 (§ 521, R. L. 1910).—Supreme Court of Oklahoma, 151 P. R., 692.

Streets—Dedication—Opening.

Borough of Shamokin et al. v. Helt et al.—In an action to determine whether certain land was a part of the street where it appeared that more than 58 years had elapsed after the lots were platted, and that the land had never been open to public use, such street could not be opened without the consent of the owner under Act May 9, 1889 (P. L. 173), providing that any street laid out in town plat of lots, in case the same has not been opened to or used by the public for 21 years next after the laying out of the same, shall not be opened without the consent of the owners.—Supreme Court of Pennsylvania, 95 A. R., 385.

Public Nuisance—Injury to Private Individuals—Measure of Damages.

Lewis v. Pingree National Bank.—Where the court, at the suit of a private individual for the abatement of an encroachment on a street, constituting a public nuisance, and for damages, refused to abate the nuisance, plaintiff could recover all the damages sustained, past and prospective; and where the encroachment lessened the rental value of the business property of plaintiff, he could recover in the action the full depreciation of the value, and recover such a sum as, if invested at the legal rate of interest, would produce the amount of the lessened rental value.—Supreme Court of Utah, 151 P. R., 558.

Local Improvements—Objections—Limitation of Actions.

Wheeler v. City of Muskogee.—Within 60 days after the passing of the ordinance making the final assessment for the paving improvements plaintiff sought to enjoin the officers of the city of Muskogee from enforcing the collection of such paving assessments, and set up in his petition two causes of action or grounds for relief. After the 60 days had expired, plaintiff amended his original petition by incorporating therein several additional causes of action. Held, that the statute of limitation when applied to such new causes of action treats the action as commenced when the amendments were filed, and such amendments do not relate back to the beginning of the action. The causes of action set forth in the amendments which are not based upon the exceptions contained in section 728, Comp. Laws 1909, are barred.—Supreme Court of Oklahoma, 151 P. R., 635.

Obstruction of Street—Injunction.

United N. J. R. & Canal Co. et al. v. Crucible Steel Co. et al.—Relief by injunction against the obstruction of a public street cannot be granted, without proof that it has been accepted as a public street, with obligation to repair it for public passage.—Court of Chancery of New Jersey, 95 A. R., 243.

Public Places—Care Required.

City of Norfolk v. Anthony.—Where public buildings are operated for profit, in the exercise of which operation the city is performing a ministerial duty, the duty devolves upon the city to use the same care that is required of a private owner with respect to invitees upon his premises.—Supreme Court of Appeals of Virginia, 86 S. E. R., 68.

Regulation of Public Service Corporations.

York Water Co. v. City of York.—Although cities may, under their police power, prescribe reasonable regulations for the protection of the health, lives, property and safety of their inhabitants, though public service corporations are affected thereby, they cannot, under the guise of a police regulation, determine the reasonableness of rates charged by such corporations, or prescribe regulations relating to their facilities, service and business.—Supreme Court of Pennsylvania, 95 A. R., 396.

Confirmation of Assessments—Failure to Object.

Grandin et al. v. City of Tacoma et al.—Laws 1911, c. 98, § 23, provides that whenever any assessment roll for local improvements shall have been confirmed by the council, the regularity, validity and correctness of the proceedings shall be conclusive, and cannot be contested in any proceeding whatsoever by any person not filing written objections, and not appealing from the action of the council in confirming such assessment roll in the manner provided for in the act. A special assessment for a street system of storm drainage having been levied, certain property owners assessed sought to attack the assessment of their property on the ground that, not having been benefited, the city was without power to levy it. Held that, by failing to file written objections before the confirmation of the assessment roll showing that the improvement was of no benefit to their property, plaintiffs were estopped to object after the confirmation of the assessment.—Supreme Court of Washington, 151 P. R., 254.

Street Paving—Assessments—Apportionment of Costs.

Kaplan v. Mayor and Council of City of Macon.—The act of the general assembly approved August 17, 1903 (Acts 1903, p. 574, § 8), authorizes the mayor and council of the city of Macon "to assess one-third of the cost of grading, paving, macadamizing, constructing side drains, crossings and otherwise improving the roadway or street proper on the real estate abutting on each side of the street improved, and the real estate abutting on each side shall be assessed and shall pay two-thirds of the entire cost." (a) Where in pursuance of such authority the municipality paved and improved one entire street, including the intersections of cross streets, and assessed two-thirds of the cost to the abutting property owners upon the basis of the whole length of the street (eight blocks), instead of upon the basis of from street to street at intersecting streets, or from end to end of each portion of the street paved having equal width, such assessment is not illegal for the reason that the property of an abutting lot owner fronts the street at a place where it is only 40 feet wide, whereas the assessment is based upon the mean width of the street for the total distance of the entire street. In such case the entire street is the taxing district, and not the block, and the mayor and council would be authorized to apportion the cost of paving the entire street "among the various abutting lot owners according to their frontage on the street, and without reference to the width of the particular portion of the street which lay immediately in front of their property." (Mayor, etc., of Savannah v. Weed, 96 Ga., 670, 677, 23 S. E., 900.) (b) In assessing the entire cost of paving a street, as ruled above, intersections and alleys may not be deducted. (1 Page & Jones on Taxation by Assessment, § 440.)—Supreme Court of Georgia, 86 S. E. R., 219.

Abandonment of Streets—Delay in Opening.

Sipe et al. v. Alley.—Delay in opening a street is not an abandonment thereof, except so far as statutory or charter provisions fix a rule to the contrary.—Supreme Court of Appeals of Virginia, 86 S. E. R., 122.

Obstructions in Streets—Contributory Negligence.

Culp v. Reading Transit & Light Co.—While anyone is ordinarily at liberty to pass from the sidewalk to the street at any point, yet, where there is a known temporary obstruction, which a slight detour would avoid, one who steps directly over the obstruction does so at his own risk.—Supreme Court of Pennsylvania, 95 A. R., 391.

Public Improvements—Remonstrance.

Lais et al. v. City of Silvertown.—Under a city charter providing that the owner or owners of two-thirds of the land next adjacent to a street to be improved may file a written remonstrance against the proposed improvement, an administrator cannot sign a remonstrance on behalf of the real estate of the property under administration.—Supreme Court of Oregon, 151 P. R., 712.

Ordinances—Approval.

Wolcott, Attorney General, ex rel. Taxpayers' League, Inc., v. Mayor and Council of Wilmington, et al.—A municipal ordinance is not invalid because, after approval thereof by the mayor, his action has not been reported to the city council at a session held after the passage of the ordinance, where the making of such report is according to an established custom merely, and not to a legal or statutory enactment.—Court of Chancery of Delaware, 95 A. R., 303.

Sewer Assessment—District—Property Included.

City of Chicago v. Sullivan Machinery Co. et al.—While property may be benefited which is not immediately reached by a sewer, and must be included in the sewer district when the ordinance makes possible a connection between the property and the outlet, with some provision permitting the property owner to use such outlet in the future, property need not be included in a new sewer district where it is impossible to make any physical connection with the outlet of the new district, and the only benefit derived is the relief from congestion by the fact that the property in the new district will not use the outlet of the sewer draining such property as it did before.—Supreme Court of Illinois, 109 N. E. R., 696.

Shade Trees—Board of Public Works—Statutes.

Whiting v. Woods et al.—The powers "imposed by law" on road commissioners, which, together with specified powers, a city's charter (St. 1896, c. 438, § 37) provides its board of public works shall have not only gives the board the then existing powers of road commissioners, but as powers are thereafter given the road commissioners, extends them to such board, as the power given by St. 1915, c. 145 (an act to codify and amend laws relative to public shade trees), § 5, to road commissioners to order, without public notice and a hearing, removal of a public shade tree deemed by them to obstruct, endanger, hinder or inconvenience persons traveling on the highway; such act being applicable to the city not in terms excepted from its provisions.—Supreme Judicial Court of Massachusetts, Hampden, 109 N. E. R., 728.

Removal or Suspension of Officers—"Full Hearing."

State ex rel. Timothy et al. v. Howse et al.—Ouster Act (Acts 1915, c. 11), § 7, provides that ouster proceedings thereunder shall be summary and triable as equitable actions, regardless of the court in which they are brought. Section 10 authorizes the suspension of the officer sought to be ousted pending the determination of the proceeding, and provides that no person shall be suspended without five days' notice of the application for the order of suspension, and that he shall be entitled to a full hearing upon the charges contained in the complaint and upon the application for the order of suspension. Held, that the "full hearing" provided for is not a "final hearing," but means no more than that the chancellor or trial judge shall give ample opportunity to both sides to make a showing fairly adequate to make manifest the propriety or impropriety of the suspension.—Supreme Court of Tennessee, 178 S. W. R., 1110.

Injuries from Defective Streets—Contributory Negligence.

Middleton v. City of Cedar Falls et al.—It is not negligence per se to pass along a street in the nighttime without a light, nor to walk rapidly when so doing, especially where the party has no reasonable grounds for believing that the city has been derelict in its duty in keeping the street in a reasonably safe condition, and where under the law she has a right to anticipate that it is in a safe condition.—Supreme Court of Iowa, 153 N. W. R., 1040.

Sewers—Property Constituting Street.

City of Chicago v. Sullivan Machinery Co. et al.—Where a city passed a track elevation ordinance, with provision for construction of a subway at the intersection of a street, which ordinance was accepted by the railroad, the city acquired the subway as part of the street, and it was unnecessary in the first resolution for construction of a sewer in the street to describe the property within the railroad right of way or provide condemnation thereof.—Supreme Court of Illinois, 159 N. E. R., 696.

Personal Injuries—Vaccination—Liability of City.

Howard v. City of Philadelphia.—Where, in order to relieve himself from the regulations of a quarantine established by city health authorities in the district where he resided, plaintiff submitted to vaccination by a physician employed by the board of health, and the operation was negligently performed, in consequence of which a serious illness resulted, causing amputation of one of plaintiff's limbs, the city was not liable.—Supreme Court of Pennsylvania, 95 A. R., 388.

Charter Amendment.

Pryzbylowski v. Board of Poor Commissioners, et al.—The fact that the local acts creating the board of poor commissioners of the city of Detroit and the office of city physician, and prescribing their duties, were not designated specifically in their title or wording as part of, or amendments to, the city charter, did not except them from amendment by the people, if the intention to amend appeared by reasonable construction of the language of the civil service amendment to the charter.—Supreme Court of Michigan, 154 N. W. R., 117.

Paving Contracts—Construction.

Barber Asphalt Paving Co. v. City of St. Paul, Minn.—A paving contract declared that the contractor guaranteed the pavement for a term of ten years, and for the purpose of effectuating the guaranty would keep the pavement in good and sufficient repair, and at the end of ten years deliver it in good order, reasonable wear and tear excepted. The contract further provided that if during the ten-year term it should be found that the work was defective from overburning or improper mixing or any other preventable cause, or that the work had been done in an unskillful manner, the contractor should, at its own cost, entirely replace the defective portion of the pavement to the satisfaction of the city's commissioner of public works, who should be the sole and only judge as to whether the pavement was in good order and condition during the continuance of and at the end of the term of ten years. It was provided that the contractor should receive compensation for making repairs necessitated by the tearing up of the pavement by public service corporations. Held, that the contractor was bound to maintain the pavement in good repair during the ten-year period free of charge. Where the paving contract expressly required the contractor to take notice of the condition of the soil and declared that he did the work at his own risk, the contractor having guaranteed the pavement for ten years cannot recover from the city for repairs occasioned by the nature of the subsoil, by the insufficient crown on the streets, or by the presence of street car tracks; the contractor being bound to notice those conditions before entering into the agreement. Where repairs were necessitated because of the escape of gas, that does not entitle the contractor to compensation from the city; it having guaranteed the pavement for ten years, even though the gas company might be liable.—Circuit Court of Appeals, Eighth Circuit, 224 F. R., 842.

NEWS OF THE SOCIETIES

Calendar of Meetings.

Nov. 2, 3.—ILLINOIS MUNICIPAL LEAGUE.—Annual convention, University of Illinois, Champaign.

Nov. 9-12.—ATLANTIC DEEPER WATERWAYS ASSOCIATION.—Eighth Annual Convention, Savannah, Ga.

Nov. 10-12.—CONFERENCE ON PRINCIPLES AND METHODS TO BE APPLIED IN VALUING PUBLIC UTILITIES.—Under auspices of the Utilities Bureau, 1009 Finance Bldg., Philadelphia, Pa.

Nov. 16-18.—PENNSYLVANIA INDUSTRIAL AND PUBLIC WELFARE AND ENGINEERING CONGRESS.—Third conference, Harrisburg, Pa.

Nov. 17-19.—NATIONAL MUNICIPAL LEAGUE.—Annual Convention, Dayton, O. Secretary, Clinton Rogers Woodruff, 705 North American Bldg., Philadelphia, Pa.

Nov. 27-Dec. 3.—NATIONAL COMMERCIAL GAS ASSOCIATION.—Annual Convention, Savannah, Ga.

Dec. 27-Jan. 8, 1916.—SECOND PAN-AMERICAN SCIENTIFIC CONGRESS.—Washington, D. C., Department of State, Washington.

Feb. 15-18, 1916.—SECOND NATIONAL CONFERENCE ON CONCRETE ROAD BUILDING.—Secretary, J. P. Beck, 208 S. LaSalle St., Chicago, Ill.

American Electric Railway Association.

The convention of the Electric Railway Association was held at San Francisco, Cal., October 4-9. The officers elected at the final session are as follows:

American Electric Railway Association.—President, Charles L. Henry, president Indianapolis & Cincinnati Traction Co., Indianapolis, Ind.; first vice-president, L. S. Storrs, president Connecticut Company, New Haven, Conn.; second vice-president, Timothy S. Williams, president Brooklyn Rapid Transit System, Brooklyn, N. Y.; third vice-president, John J. Stanley, president Cleveland Railway Company, Cleveland, O.; fourth vice-president, J. H. Pardee, president Eastern Pennsylvania Railways Company, Pottsville, Pa.

American Electric Railway Accountants' Association.—President, T. P. Kilfoyle, auditor Cleveland Railway Company, Cleveland, O.; first vice-president, L. T. Hixson, auditor Terre Haute, Indianapolis, & Eastern Traction Co., Indianapolis, Ind.; second vice-president, R. A. Culloden, secretary and auditor Pacific Railway Company, Los Angeles, Cal.; third vice-president, George G. Whitney, Washington Railway & Electric Co., Washington, D. C.; secretary, M. R. Boylan, general auditor Public Service Railway Company, Newark, N. J.

American Electric Railway Manufacturers' Association.—President, Thos. Finnegan, vice-president Pierson, Reading & Co., San Francisco, Cal.; vice-president in charge of relations, Charles C. Pierce, manager railway department General Electric Company, Boston, Mass.; vice-president in charge of finance, L. E. Gould, western manager Electric Railway Journal, Chicago, Ill.;

vice-president in charge of exhibits, Daniel W. Smith, president the Peter Smith Heater Company, Detroit, Mich.; vice-president in charge of entertainment, E. F. Wickwire, general sales agent the Ohio Brass Company, Mansfield, O.; secretary-treasurer, H. G. McConaughy, manager Dearborn Chemical Company, New York.

American Railway Engineering Association.—President, John Lindall, superintendent of rolling stock and shops, Boston Elevated Railway Company, Boston, Mass.; first vice-president, F. R. Phillips, superintendent of equipment Pittsburgh Railways Company, Pittsburgh, Pa.; second vice-president, G. W. Palmer, Jr., electrical engineer, Bay State Railway Company, Boston, Mass.; third vice-president, W. G. Gove, superintendent of equipment, Brooklyn Rapid Transit System, Brooklyn, N. Y.; secretary-treasurer, E. B. Burritt, New York City.

American Electric Railway Claims Association.—President, George Carson, claim agent, Puget Sound Traction, Light & Power Co., Seattle, Wash.; first vice-president, R. E. MacDougall, claim agent, New York State Railways, Rochester, N. Y.; second vice-president, S. B. Hare, claim agent, Altoona & Logan Valley Electric Co., Altoona, Pa.; third vice-president, B. F. Boynton, claim agent, Portland Railway, Light & Power Co., Portland, Ore.; secretary-treasurer, B. B. Davis, claim adjuster, the Columbus Railway, Power & Light Co., Columbus, O.

American Electric Railway Transportation and Traffic Association.—President, H. A. Nicholl, general manager, Union Traction Company of Indiana, Anderson, Ind.; first vice-president, L. C. Bradley, assistant district manager Stone & Webster Companies, Texas District, Dallas, Tex.; second vice-president, R. E. Danforth, general manager, Public Service Railway Company, Newark, N. J.; third vice-president, W. H. Collins, vice-president and general manager, Fonda, Johnstown & Gloversville Railway, Gloversville, N. Y.

Bion J. Arnold, in addressing the convention on "The Foundation Principles of the Valuation of Electric Railways," took occasion to bid his auditors to "stop worrying" about municipal ownership.

"Let us spend no more time," he said, "worrying about whether immediate municipal ownership or ultimate municipal ownership is what the people want. Chicago once tried to get municipal ownership, but failed because the city could not raise the money. A study of bond limits and the indebtedness of other cities shows like conditions. The point I want to make is that we must cease wasting our energies in opposing a public movement that will surely come in spite of opposition, if it is economically sound, and direct our attention to the terms of the purchase clause and the conditions of a resettlement franchise."

League of American Municipalities.

The convention of the American League of Municipalities was held in New Orleans September 27-29. Mayor Martin Behrman, of New Orleans, was elected president; L. A. Lapointe, Montreal, Canada, second vice-president; Patrick J. O'Brien, Newark, N. J., third vice-president; John E. Curley, Mayor of Boston, fourth vice-president; Robert E. Lee, of Baltimore, secretary and treasurer; C. J. Brown, city clerk of Montreal, honorary secretary for Canada.

Newark, N. J., was selected as the 1916 meeting place and the session is to be held coincident with the celebration of the 200th anniversary of the founding of Newark.

Problems connected with port development, providing proper recreation for residents of cities, and maintaining public markets, were among the subjects discussed.

George H. Davis, of New Orleans, spoke on the advantages accruing to cities through port development, and Ira W. Jayne, superintendent of Detroit's recreation commission, led the discussion on the municipality's responsibility in providing diversion and recreation for city dwellers.

Leon I. Kahn, commissioner of public utilities, Shreveport, La., asserted the establishment of a municipal market in Shreveport had cut the cost of farm products one-half to consumers in that city. As a further means of reducing the cost of living he advocated maintenance of municipal abattoirs, and the establishment of farm loan banks or rural credits.

Other speakers were: "Advantages of Commission Government in Trenton," by C. J. Swartz, receiver of taxes of Trenton, N. J.; "Public Safety," by Harold W. Newman, commissioner of public safety of New Orleans, and "Municipal Fire Insurance," by Mark F. Phillips, chairman of the finance committee of the city of Newark, N. J.

League of Washington Municipalities.

At the sixth annual convention of the League of Washington Municipalities, held in North Yakima from October 6-8 inclusive, the leading feature was an extended discussion of public utilities, each party to the controversy being represented by some of its ablest men.

Other important timely discussions which engaged the attention of the convention dealt with the reorganization of public health work in the state of Washington, public milk and water supplies, the managerial form of municipal government, and university training for public service.

The report from the League's committee on public utilities included a proposed legislative bill relating to powers of municipalities with reference to public utilities, which received the endorsement of the convention and which is to be submitted to the voters of the state as an initiative measure at the next election. The convention also instructed the same committee to draw

up, before next January, a bill giving to the cities and towns of the state a larger measure of home rule in local municipal affairs.

Other legislative work mapped out for committees of the League includes:

(1) A bill providing optional forms of government for cities other than first class.

(2) Preparing suitable legislation extending the principle of the merit system to state, county and city positions.

(3) Co-operating with the state commissioner of health in the preparation of a revised public health code for the state.

One of the resolutions adopted by the convention calls for the appointment of a committee to work out a proposal for a city planning conference in connection with the work of the League, and another resolution relates to the League's co-operation with the Utility Bureau established by the conference of American Mayors.

The proceedings of the convention will be published within a few weeks.

The following officers were elected: President, Leonard O. Meigs, city attorney, North Yakima; vice-president, W. H. L. Ford, city treasurer, Everett; secretary-treasurer, Herman A. Brauer, University of Washington, Seattle.

League of Texas Municipalities.

The third annual convention of the League of Texas Municipalities will be held at Greenville, November 11 and 12. President R. M. Chapman, mayor of Greenville, will preside. During the morning session the committees on Municipal Ownership, Mayor A. P. Woolridge, Austin, chairman, and Legal Powers of Cities Under the Home Rule Enabling Act, Dr. Herman G. James, chairman, will report. In the afternoon the committees on Sanitation, Dr. B. F. Arnold, chairman, and Sewage Disposal, Mayor J. W. Riggins, Waco, chairman, will report, and there will be special addresses on sanitation by Dr. Edgar W. Loomis and on sewage disposal by J. B. Hawley, consulting engineer, Fort Worth, and E. E. Sands, city engineer, Houston. Later there will be a visit to the municipal plants.

The address of welcome and response and a musical entertainment will be given in the evening. There will also be a lecture by R. E. McDonnell, consulting engineer, Kansas City.

Committees on Street Maintenance, A. D. Duck, city engineer, Greenville, chairman; City Planning, Mayor E. H. McCushton, of Paris; Traffic Regulations, Mayor H. D. Lindsley, Dallas; Taxation, J. J. Pastoriza; Duties of City Secretaries, Miss Zada Mills, will report at the Friday morning session. After the election of officers and a selection of the place for the next meeting which will take place in the afternoon there will be a special address by Mayor Ben Campbell of Houston on "Elimination of Grade Crossings."

Iowa Association of Chiefs of Police.

The annual convention was held at Waterloo September 30-October 1. Discussion of legislation of importance to chiefs of police and other peace officers took up much of the time.

A committee was appointed to consider plans for widening the scope of the organization and submitted its report. The committee recommended that the name the "Iowa Association of Chiefs of Police" be retained and also recommended that a committee of three be appointed to draft by-laws, this committee to report back at the next annual meeting. This report was adopted.

T. T. Keliher, chief special agent of the Illinois Central, was called upon to discuss co-operation between police officials and railway special agents. The fundamental principle, he declared, is a more brotherly feeling among all officers and one of the prime objects of the organization is to launch a campaign for national legislation for the protection of all peace officers.

Mr. Keliher declared that one of the chief drawbacks to all police departments and all special agents' departments was petty jealousy and ill feeling among the members of a department. He urged the chiefs of police to set a high standard for their departments and dispense with the men who were not giving their honest efforts to the department.

The old officers of the association were re-elected by acclamation, Captain H. T. Wagner, of Waterloo, being president, Chief M. J. Jordan, of Fort Dodge, vice-president, and Lieutenant Howard Garrison, of Waterloo, secretary and treasurer. Mason City was selected as the place for the next meeting.

Illinois Municipal League.

The annual convention of the Illinois Municipal League will be held at the University of Illinois, Champaign, on Tuesday and Wednesday, November 2 and 3. Sessions will be held in the University buildings on Tuesday afternoon and on Wednesday morning and afternoon. On Tuesday evening there will be an informal smoker at the Beardsley Hotel, Champaign.

On the program, as thus far arranged, will be the following:

Address of welcome, Edmund J. James, president University of Illinois. President's address, W. W. Bennett, Mayor of Rockford.

"Some Aspects of the Engineering Department of Small Cities, A. N. Talbot, professor of Municipal and Sanitary Engineering of the University of Illinois.

"The City Streets," J. E. Smith, assistant professor of Civil Engineering, University of Illinois.

"Modern Street Lighting and Its Relation to Auto Headlights," Morgan Brooks, professor of Electrical Engineering, University of Illinois.

"The City of Local Utilities," R. E. Hellman, assistant professor of Engineering, University of Illinois.

"City Planning and the Courts," R. E. Cushman, instructor in Political Science, University of Illinois.

"The Health Department of Small Municipalities," Dr. H. B. Hemenway, of Evanston.

"The Homeless Man," J. F. Rogers, of Chicago Department of Public Welfare.

"Municipal Statistics," W. G. Adkins, of Chicago.

It is also planned to have a Question Box, at which municipal problems previously submitted will be briefly discussed by competent experts. Questions and other suggestions for the program are invited.

Membership in the League is open to cities and city officials, and also to business and civic organizations.

New York State Waterways Convention.

The sixth annual convention of this association was held at Syracuse October 7-9. The main interest in the convention, which was well attended, centered on the adoption of the barge canal referendum.

Many interesting and important papers were presented at the convention. Frank S. Ellsworth, secretary of the association, declared New York City was losing its prestige and that only a proper development of canal traffic could restore this.

George Clinton, of Buffalo, chairman of the canal committee of the consti-

(Continued on page 672.)

PERSONALS

Clark, Owen, former mayor of Stevens Point, Wis., and for 16 years a member of the council, died October 14, after an illness of two years.

Dayton, James A., commissioner of public works of Long Island City, has been elected president of the Queens County Bar Association.

Hogg, Wellington D., has been appointed second assistant chief of the Binghamton fire department.

Hoopers, Edgar M., Jr., formerly Chief Engineer of the Water Department of Wilmington, Del., has been elected City Engineer. He will also perform the duties of his former position.

Lee, W. L., has been selected to supervise paving construction in Sumter, S. C.

Lees, William J., chief engineer of the Central Falls, R. I., fire department, died October 16, after a three weeks' illness of typhoid fever.

Mathews, Lynn, chief of police of Galesburg, Ill., was killed October 17 while leading a raid on a gambling house.

Rodgers, Howard S., has been appointed fire chief of Jamestown, N. Y., succeeding the late F. H. Wilson.

Sayars, Mrs. R. C., has been appointed Health Officer of High Point, N. C.

Shadduck, B. H., pastor of the Methodist Church of Charleston, W. Va., has been appointed temporarily as chief of police of that city.

NEW APPLIANCES

Describing New Machinery, Apparatus, Materials and Methods and Recent Interesting Installations.

REFUSE VEHICLE.

A Sanitary Refuse Collection Auto of New Design.

In the recent exhibition of street cleaning appliances held in New York under the auspices of the department of street cleaning, one of the latest designs for a refuse collection system was shown in a model of the "Mesco" sanitary vehicle. It is worked out somewhat on the same principle as the "Ochsner" and "Columbia" systems shown at the exhibition and described in these pages in the issue of Dec. 10, 1914. The Mesco vehicle is designed for the odorless and dustless collection of ashes and garbage and to reduce the work of the collectors and make it more rapid and efficient.

No special can is required as the vehicle can collect from any ordinary can in general use or sanitary cans of various types and sizes. The vehicle consists essentially of a closed body, with sloping sides and covered hoppers, a mechanism for raising the cans and dumping them, a hoist for dumping all the load through the rear, the whole mounted on an auto chassis.

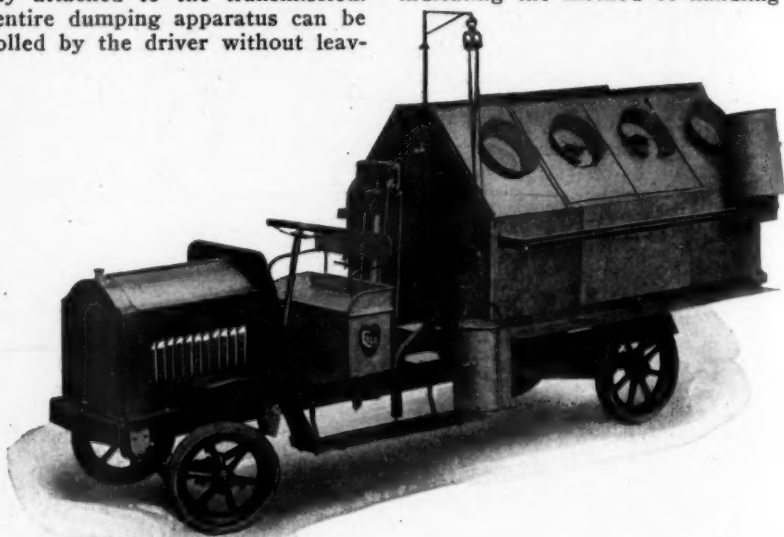
In loading, the operator, by means of an endless chain, raises the hoisting crane and places the mono-rail roller conveyor on either side in place. The loaded can is clipped to the steel cable pulley tackle and raised by means of power to the roller conveyor. A man guides the can to the right hopper mouth and tips it. The edge of the can bears against the lip on the cover of the hopper and causes it to open, allowing the contents to be deposited in the truck. The removal of the can automatically closes the hopper mouth. During the emptying operation the tapering hopper provides a sealed connection, preventing dust or odors from escaping.

The vehicle is dumped by means of a Packard hydraulic hoist, which consists of a hydraulic cylinder, using ordinary gas engine oil actuated by an oil pump at the base of the cylinder. Power for driving the geared pump is taken from the driving shaft or from a special Packard power drive mechanism directly attached to the transmission. The entire dumping apparatus can be controlled by the driver without leav-

the telescopic crane which raises the can to the mono-rail conveyor.

The covered body is easily converted into an open one for cleaning purposes by a turn of the handle located near the front.

One of the accompanying illustrations shows a model of the vehicle indicating the method of handling the



"MESCO" REFUSE COLLECTION VEHICLE.

ing his seat. This hoist is designed to elevate a six ton load to a 55 degree angle in 20 seconds, the body returning to its lowered position in 12 seconds. This angle of 55 degrees enables clean scavenging and the whole method of dumping reduces the labor necessary and eliminates the necessity for special unloading mechanism such as power cranes. In connection with the loading a Packard winch which is small, compact and operated by power conveniently controlled, is used for working

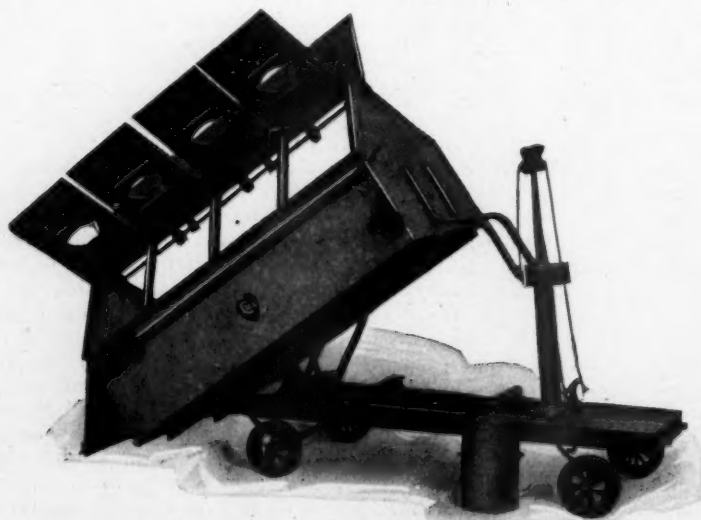
cans. The other shows the method of dumping and also the covers raised for cleaning. The Mesco system is the work of M. Eberhart & Son Co., 76th street and First avenue, New York City.

GRAVITY MIXER.

Concrete Mixed by Gravity Instead of Power.

The automatic concrete mixer, which uses the Hains-Weaver process, applies gravity to the mixing of concrete and eliminates the use of power needed in the rotary type of mixer. Instead of the mixer rotating, only the material is rotated. The process is based on the principle of the hour-glass.

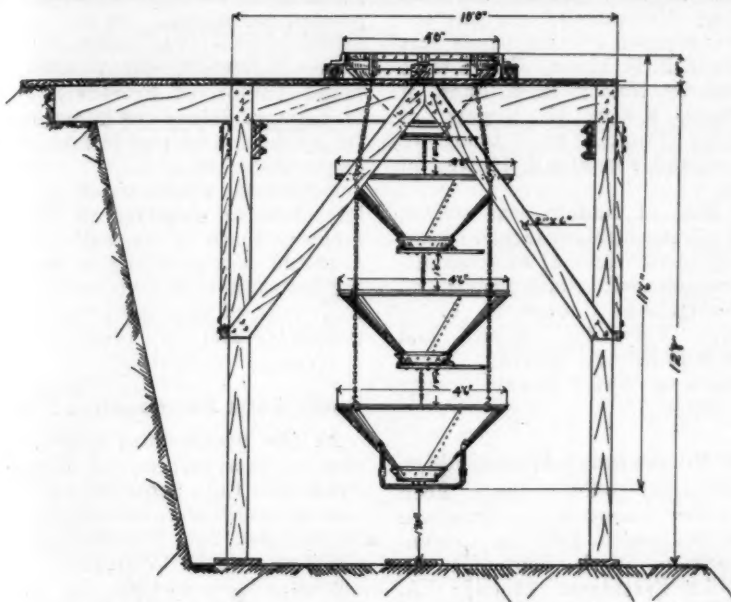
The mixer consists of four conical shaped hoppers hung below each other. The batch is placed in the top or charging hopper and by means of a gate in the bottom of each the mix is discharged from hopper to hopper. The sides of these hoppers are sloped at such an angle that the batch rolls inward on itself like the sands in the hour glass, and is thoroughly rotated. The charging hopper will clean itself in about five or ten seconds, so by recharging the moment it is empty and releasing the contents of one hopper as soon as the next below is free, the time required to mix the batch is but the time needed to load and empty one hopper.



"MESCO" VEHICLE, DUMPING AND OPEN.

The entire charge is received in a hopper before it is discharged. An even layer of crushed stone, cinders or gravel is first run in. The cement is spread over the entire surface of the

The large type mixer for central plants consists of four top or charging hoppers and three large or mixing hoppers, with valves, gates, leg supports for the top hoppers and struc-



FRAMING FOR ONE-BAG "AUTOMATIC" MIXER.

stone so as to hold back the water at the top of the charge. The sand is added next and finally the water, which washes the sand before the mixing begins. The inward, downward, crowding motion revolves each part of the batch many times in passing from one hopper to another.

The Automatic mixer is made in one bag and two bag batch sizes, one yard size, and one and one-half and two yard standard large type for central plants. The one-bag mixer is designed for general building and sewer work, being light and compact. It is quickly installed and easily operated and is calculated to deliver a batch in 17 seconds. It weighs 700 pounds and is 10 cubic feet capacity. The two-bag mixer is designed to take care of a great variety of work. It weighs 1,400 pounds and has a capacity of 16½ cubic feet. It may be used with a half or one-yard tower bucket to make a tower equipment.

The one-yard mixer has four hoppers 6 feet in diameter, made of boiler plate steel reinforced with angle iron. Each of the upper three hoppers have slide grout-tight gates and the bottom hopper has a slide or scissor door which is designed for drawing the volume of concrete that may be taken from the hopper without releasing the entire charge. This outfit is used where a large total quantity or large unit in limited time is needed, such as in monolithic work. The one-yard mixer weighs 2,000 pounds, is 15 feet high and has a cubic capacity of 32½ feet.

tural steel beam supports for the large hoppers. The 1½ yard mixer consists of four 4½-foot charging hoppers and three 7-foot mixing hoppers. The weight is 3,500 pounds, height 17½ feet, and cubic capacity 45 feet. The 2-yard mixer consists of four 5-foot charging and three 8½-foot mixing hoppers. Weight is 7,000 pounds; height, 22 feet, and capacity, 80 cubic feet.

In connection with the Automatic mixer may be used the Automatic concrete chute, re-mix hoppers, flexible chute, tower bucket, steel receiving

tower hoppers, and bottom dump buckets. The concrete spouting for tower work is made of annealed steel plate in three pieces, vertical sides and semi-circular bottom, reinforced with two-inch angle irons. The removable bottom section can be replaced when worn at slight cost, without renewing the entire chute.

The illustrations show the framing plan of a one-bag batch mixer and also the use of the mixer on the construction of the Aspinwall waterworks of Pittsburgh by John F. Casey Co., contractors. The mixer is made by the Automatic Concrete Mixer Company, 428 Kinsley avenue, Providence, R. I.

INDUSTRIAL NEWS

Cast Iron Pipe.—Chicago — The United States Cast Iron Pipe & Foundry Co. is low bidder on 1,400 tons of pipe at Cincinnati, but there is little business in sight aside from this. The water pipe season is about at a close. Quotations: 4-inch, \$28; 6-inch and up, \$26; Class A, \$1 extra. Birmingham—There is a falling off in inquiries and orders which is, however, regarded as a temporary lull. Active capacity has not been decreased. Prices remain the same. Quotations: 4-inch, \$22; 6-inch and up, \$20. New York—Peapack, N. J., has opened bids on pipe laying work requiring 700 tons of 6 to 8-inch. Prices are strong. Quotations: 6-inch, Class B and heavier, \$26; Class A, \$27.

Lead.—Quotations: New York, \$4.50; St. Louis, \$4.425.

The Kissel Motor Car Company, Hartford, Wis., has issued a statement that the "All-Year" car is a Kissel



"AUTOMATIC" MIXER ON PITTSBURGH WATER WORKS CONSTRUCTION.

trade name to which the Kissel company claims exclusive rights. The name has been used for more than a year to identify the convertible type of KisselKar originated and introduced by the company in August, 1914. Any use of the name by other manufacturers will be interpreted as infringement and unfair competition.

The General Electric Company, Schenectady, N. Y., has issued a new pamphlet on "Holophane Refractors for Street Lighting." The booklet is really a very lucid exposition of some of the problems of street lighting and of the advantages of refractors over reflectors. Holophane bowl and band refractors are described.

NEWS OF THE SOCIETIES

(Continued from page 669.)

tutional convention, treated the problem as a financial one solely.

He said that the state is bound to complete the barge canal. The cost of the work actually to be done, basing the estimate on the most accurate figures available, he said will be \$9,846,000. The state already is obliged to pay \$13,500,000 in land damages and similar claims and \$3,654,000 already has been advanced. This money must be raised in one of two ways—by a bond issue or by direct taxation within the next four years. He argued for the bond issue.

Edward C. Carhart, vice-president of the Battery Park National Bank of New York and chairman of the canals committee of the New York Produce Exchange, in his paper, "The New Day," treated the broader phases of the inland waterways problem, of which the barge canal is merely a large detail. He held that it is intimately related to the problems of national defense, preparedness and foreign trade.

There were also papers by George D. Pratt, state conservation commissioner, and Prof. Herman Le Roy Fairchild, professor of geology at the University of Rochester, who spoke on the geological phenomena of central and western New York.

Commissioner Pratt spoke almost entirely on the subject of the conservation of water and handled some of the more technical phases of the question with thoroughness. He was interested particularly, however, in the relations of power companies to the state.

"The time has passed," he said, when power companies can take up valuable sites upon streams and have full enjoyment of the natural advantages there existing, under public sanction and assistance, to the detriment of others and without return to the state. The assessment for these benefits should be sufficient and just and should be periodically revised.

"Power sites now owned by the state and others for the development of which the consent of the state is required, should be held by the state and leased to the public service corpora-

tions only on terms which permit of frequent revisions and of adequate return for the privileges granted."

Dr. Hugh P. Baker, dean of the College of Forestry, Syracuse University, was to have read a paper on "Forestry as Affecting Watersheds." He was unable to be present and his paper was read by Prof. F. F. Moon. There were papers also by Nelson B. Killmer, of Long Island, Robert H. Rogers, of Schenectady, Francis H. Lamon, of Watertown, and Franklin J. Howes, of Rochester.

H. W. Hill, of Buffalo, was elected president for the fifth consecutive year. The following chairmen of sub-committees were appointed: State Canals and Inland Navigation, George H. Cobb, Watertown; Tidewater, Rivers and Harbors, Edward F. Murray, Troy; Conservation of Water Power, George Clinton, Buffalo.

League of Northwestern Municipalities.

The following officers have been elected by the League of Northwestern Municipalities which held its convention at Spokane, Wash., September 30-October 1: President, Melvine A. Brannon, president of the University of Idaho; vice-president, C. M. Fassett, Spokane; secretary-treasurer, Professor John M. Russell, Whitman College, Walla Walla; executive committee: Miles C. Moore, Walla Walla; Thomas Burke, Seattle, and Richard M. Montague, Portland, Ore. The place of the next meeting will be selected by the executive committee, invitations having been extended by Moscow, Idaho; La Grande, Ore., and Wenatchee, Wash.

Georgia-Florida Dixie Highway Convention.

The association held its first meeting at Jacksonville, Florida, September 28-29. C. H. Mann, president of the Chamber of Commerce, delivered the address of welcome. Other speakers included Mayor J. E. T. Bowden, Jacksonville; Judge P. S. Meldrim, Savannah; Gov. Park Trammell, Florida; Gov. N. E. Harris, Georgia. Addresses on the second day were as follows:

Judge M. M. Allison, president Dixie Highway Association, Chattanooga, Tenn.; Senator N. P. Bryan, Florida; John H. Williams, chairman good roads committee, Chamber of Commerce; W. S. Gilbreath, field secretary Dixie Highway Association; Mrs. W. B. Young, representing Florida Woman's Club; ex-Gov. A. W. Gilchrist, Florida; by representatives of eastern, western and central routes, leading from Macon to Jacksonville. (Speakers to be selected by the delegates from the different routes); Judge H. B. Philips.

Jackson Highway Association.

The route for the Jackson Memorial highway from Chicago as far south as Nashville was selected and a path-finding committee to go over all the routes offered for the southern stretches of the highway was appointed at the first convention of the Jackson Highway Asso-

ciation. The permanent organization was also completed with Peter Lee Atherton, of Kentucky, as president.

E. G. Dent, of Bowling Green, Ky.; Walter H. Crim, Salem, Ind., and W. L. Brown, Lafayette, Ind., were appointed pathfinders. An executive committee to be composed of President Atherton, Vice-President Creveling, Edmund Taylor, of Frankfort, Ind.; W. H. Crim, of Salem, and another member from Ohio, to be named later, also was decided on.

Notice was served on all the counties interested in proposed routes for the highway south of Nashville to send all available data on roads to the office of the association by October 30. Robert E. Woods, of Kentucky, was selected as temporary secretary of the association.

Pacific Coast Association of Fire Chiefs.

At the twenty-third annual convention of this association, held at San Francisco, Cal., September 30, the following officers were elected: Chief Thos. R. Murphy, San Francisco, president; Chief George E. Wallace, of Modesto, vice-president; ex-Chief H. W. Bringhurst, of Seattle, secretary; Chief George McAlevy, of Tacoma, treasurer; Chief D. H. McDonald, of Prince Rupert, British Columbia, Assistant Chief S. H. Short, of Oakland, Cal., Chief F. H. Kelly, of Wallace, Ida., Chief R. B. Hawcraft, of Reno, Nev., Chief F. H. Grabney, of Baker City, Ore., Chief A. B. Canfield, of Ogden, Utah, and Chief W. A. Taro, of Everett, Wash., vice-presidents of their respective states and provinces.

Fire Marshal Charles Towne strongly condemned shingle roofs on houses, in an address delivered at the morning session.

BOOK REVIEW

Hendricks' Commercial Register of the United States. (For buyers and sellers.) Twenty-fourth annual edition, 1,503 pp.; leather. S. E. Hendricks Co., Inc., 2 West 13th street, New York. Price, \$10.

This very complete register of producers, manufacturers, dealers and consumers in the architectural, contracting, electrical, engineering, hardware, iron and steel, mechanical, mill, mining, quarrying, railroad and kindred industries is now in its twenty-fourth annual edition. This year's issue has been thoroughly revised, name for name, from beginning to end. Dead wood and useless information have been eliminated and much new and valuable material has been added. The volume has been entirely reset in clean new type and bound in handsome leather instead of the cloth of previous years. These improvements should add to the work's already recognized value as a buyers' reference. It should be of particular service to the purchasing officials of municipalities.

ADVANCE CONTRACT NEWS

ADVANCED INFORMATION BIDS ASKED FOR

CONTRACTS AWARDED ITEMIZED PRICES

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS				
Neb.	Fremont	7 p.m., Oct. 30	Paving with repressed brick and constructing curb (1,334 yds. paving and 452 ft. curb)	P. A. Nelson, Chr. B. P. W.
Minn.	New Ulm	2 p.m., Oct. 30	Grading and graveling two miles of road	Herman Polkow, Chr. of Bd.
Minn.	Minneota	11 a.m., Nov. 1	Grading road	Al. P. Erickson, Co. Aud.
Cal.	San Jose	11 a.m., Nov. 1	Improving streets	H. A. Pfister, Clk. Bd. Supv.
La.	Keokuk	6 p.m., Nov. 1	1,350 sq. yds. concrete paving	O. W. Sandberg, City Clerk.
La.	Independence	M., Nov. 1	Constructing sidewalk	A. J. Goudy, VII. Clk.
Wis.	Oshkosh	2 p.m., Nov. 1	Constructing cement sidewalks	R. A. Hollister, Chr. B. P. W.
Kan.	Columbus	M., Nov. 1	Surfacing seven miles county road with gravel	County Commissioners.
Wash.	Pomeroy	10 a.m., Nov. 1	Improving highways No. 1	County Commissioners.
Ind.	Delphi	M., Nov. 1	Grading, paving and improving roads, four jobs	M. G. Horn, Co. Aud.
Ind.	Greensburg	10 a.m., Nov. 1	Grading, paving and improving road	L. W. Sands, Co. Aud.
Ind.	Goshen	2 p.m., Nov. 1	Grading, paving and improving road	J. W. Brown, Co. Aud.
Minn.	Minneapolis	11 a.m., Nov. 1	Grading road	Al. P. Erickson, Co. Aud.
Mo.	Sedalia	Nov. 1	Laying 9,200 yds. vertical fibre brick pavement; cost, \$16,000.	F. T. Leaming, City Eng.
Ind.	Greencastle	2 p.m., Nov. 1	Grading, paving and improving road	C. L. Airhart, Co. Aud.
Ind.	Fowler	1 p.m., Nov. 1	Grading, paving and improving road	Warren Mankey, Co. Aud.
Ind.	Newport	10 a.m., Nov. 1	Constructing gravel road	Roy Slater, Co. Aud.
Ind.	Williamsport	2 p.m., Nov. 1	Constructing three miles gravel road	D. H. Moffitt, Co. Aud.
Cal.	Santa Barbara	Nov. 1	Paving to cost \$17,689	Board of County Supervisors.
Ala.	Camden	Nov. 1	Constructing ten miles sand-clay or gravel road	Blair Hughes, Supv. of Roads.
O.	Youngstown	10 a.m., Nov. 1	Grading road	F. H. Vogan, Clk. Co. Comrs.
Wash.	Pasco	Nov. 1	Macadamizing trunk highway, cost \$35,000	J. W. Hamilton, Co. Engr.
Wash.	Colville	Nov. 1	Clearing, grubbing, grading, draining and bridging three miles of highway	County Engineer.
Kan.	Columbus	Nov. 1	Grading and surfacing with gravel 7 miles of county road	County Comrs.
Cal.	Bakersfield	Nov. 1	Four miles concrete or asphalt road	Co. Bd. Supervisors.
Ill.	Des Plaines	Nov. 1	4,500 sq. yds. concrete paving	John A. Bell, City Clk.
Minn.	St. Paul	10.30 a.m., Nov. 1	Curbing and repairing streets	Aug. Hohenstein, Pur. Agt.
Md.	Denton	noon, Nov. 1	Constructing one mile state aid road	H. Waldorf, Co. Rd. Engr.
Ind.	Shoals	noon, Nov. 1	Road construction	L. T. Haga, Co. Aud.
Fla.	Tavares	Nov. 1	Constructing 2.5 miles roadway	J. H. Compton, Chr. Co. Comrs.
N. C.	Bryson City	Nov. 1	Grading 15 1/2 miles of road	T. M. Howerton, Co. Engr.
Fla.	Fort Pierce	Nov. 2	Constructing hard surface road	J. E. Fultz, Co. Clk.
O.	Youngstown	noon, Nov. 2	Grading and paving road	H. C. Fox, Clk. Pub. Serv.
Ind.	Bloomington	2 p.m., Nov. 2	Constructing roads	W. F. Kinster, Co. Aud.
Ind.	Plymouth	10.30 a.m., Nov. 2	Constructing three roads	G. F. McCall, Co. Aud.
Ind.	Martinsville	noon, Nov. 2	Constructing several roads	Sam Watson, Co. Aud.
Ind.	Bloomfield	2 p.m., Nov. 2	Constructing macadam road	G. E. Kill, Co. Aud.
Cal.	San Luis Obispo	10 a.m., Nov. 2	Excavating and filling on reclamation work	F. J. Rodrigues, Co. Clk.
Ind.	Michigan City	10 a.m., Nov. 2	Constructing or repairing sidewalks for 1915 and 1916	E. G. Dunn, Jr., City Engr.
Ind.	Petersburg	2 p.m., Nov. 2	Grading, paving and improving road	John Gray, Co. Aud.
Ind.	Rensselaer	2 p.m., Nov. 2	Grading, paving and improving road	Joseph Hammond, Co. Aud.
Ind.	Noblesville	10 a.m., Nov. 2	Grading, paving and improving road	W. O. Horton, Co. Aud.
Ind.	Vincennes	2 p.m., Nov. 2	Constructing 3.5 miles gravel road	J. I. Muentzer, Co. Aud.
N. D.	Minnewaukie	10 a.m., Nov. 2	5,000 cu. yds. grading	W. E. Paulson, Co. Aud.
Minn.	Park Rapids	2 p.m., Nov. 2	40 acres of clearing and grubbing, 26,000 cu. yds. excavation, 21 metal culverts and 4,310 ft. turnpike	Frank Heisel, Co. Aud.
Ind.	Shelbyville	10 a.m., Nov. 3	Grading, paving and improving roads, two jobs	F. W. Fagel, Co. Aud.
Ind.	Indianapolis	10 a.m., Nov. 3	Grading road	W. T. Patten, Co. Aud.
Pa.	Allentown	5 p.m., Nov. 3	4,000 bbls. Rocmac binder	Bascom & Sieger, Twp. Engrs.
O.	Cheviot	noon, Nov. 3	Grading and improving streets, paving with brick and constructing concrete curb and gutter	A. J. Reusing, Clk. Council.
Va.	Lebanon	Nov. 3	7.24 miles road construction	G. P. Coleman, State Hwy. Comr., Richmond.
Ind.	Muncie	10 a.m., Nov. 3	Constructing two gravel or macadam roads	F. M. William, Co. Aud.
Ind.	Lafayette	10 a.m., Nov. 3	2.93 miles gravel road improvement	Geo. W. Baxter, Co. Aud.
N. Y.	Brooklyn	11 a.m., Nov. 3	Repairing sidewalks on several streets	L. H. Pounds, Boro. Pres.
Cal.	Arcadia	Nov. 4	Constructing 16 miles oil-macadam road and 10,000 ft. concrete curb and gutter	Geo. Grimes, City Clk.
Kan.	Marysville	noon, Nov. 4	Grading 3-4 mile road	R. F. Gallup, Co. Eng.
Pa.	Harrisburg	10 a.m., Nov. 4	1,756 ft. bituminous or concrete, 4,054 ft. brick and 5,508 ft. macadam road construction	State Highway Department.
Ind.	Evansville	10 a.m., Nov. 4	Grading, paving and improving road	C. P. Beard, Co. Aud.
Neb.	Kearney	noon, Nov. 4	Fill and Roadway	K. H. Dean, Co. Clk.
Kan.	Marysville	noon, Nov. 4	Grading 3/4 mile road, includes earth and rock excavation	R. S. Gallup, Co. Engr.
Cal.	Arcadia	8 p.m., Nov. 4	Paving with oil macadam and constructing concrete curb and gutter on 16 miles of streets	G. E. Grimes, City Clerk.
La.	Monroe	noon, Nov. 5	Gravel rd. with comb. curb & gutter & Tarvia topping	City Engineer
Ind.	Albion	Nov. 5	Constructing county road	Co. Comrs.
Ind.	Columbia City	2.30 p.m., Nov. 5	Three highways	T. A. McLaughlin, Co. Aud.
Ind.	Columbia City	1 p.m., Nov. 5	Road	T. A. McLaughlin, Co. Aud.
Ind.	Hartford City	7 p.m., Nov. 5	Constructing sidewalk	Edwin McEldowney, City Clk.
N. J.	Elizabeth	Nov. 5	Constructing sidewalk	W. H. Luster, Boro. Engr.
Ind.	Danville	10.30 a.m., Nov. 5	Grading, paving and improving road	L. W. Borders, Co. Aud.
N. Y.	New York	2 p.m., Nov. 5	Regulating and repaving with sheet asphalt and constructing concrete sidewalks on several streets	M. M. Marks, Boro. Pres.
O.	Youngstown	1 p.m., Nov. 6	Constructing three miles slag macadam road	C. F. Shipley, Clk. R. F. D. 1.
Tex.	Beaumont	Nov. 6	Constructing 11 miles of road	County Comrs.
O.	Columbus	noon, Nov. 6	Constructing sidewalk	C. E. Manning, Mayor, Harrisburg.
N. J.	Highland Park	8 p.m., Nov. 8	Constructing sidewalks on several streets	F. A. Metzrath, Boro. Clk.
Miss.	Columbus	Nov. 8	Constructing 35 miles macadam road	G. E. Hauser, Engr.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Ind., Peru	.....noon, Nov.	8..	Grading, paving and improving road.....	F. K. McElheny, Co. Aud.
Tenn., Maynardville	.....Nov.	8..	Constructing macadam road and bridges.....	G. M. Taylor, Chr. Co. Comm.
Ind., South Bend	.....11 a.m., Nov.	8..	Constructing three gravel roads.....	Clarence Sedgwick, Co. Aud.
O., Euclid	.....Noon, Nov.	8..	Grading, draining and paving with brick.....	H. S. Dunlop, Vil. Clk.
Cal., Bakersfield	.....Nov.	8..	Improving Bakersfield-Mojave Road.....	Co. Bd. of Supervisors.
Fla., Miami	.....7.30 p.m., Nov.	8..	Grading and paving with asphaltic concrete and with sand and asphalt oil.....	W. B. Moore, City Clerk.
O., Harrisburg	.....noon, Nov.	8..	Constructing sidewalks.....	C. E. Manning, Mayor.
N. J., Trenton	.....Nov.	9..	Constructing state road at Hightstown.....	State Road Commr.
Fla., Titusville	.....Nov.	9..	Constructing 68 miles of road; cost, about \$150,000.....	S. A. Osteen, Chr. Co. Comrs.
N. Y., Albany	.....Noon, Nov.	9..	Paving terminal site.....	W. W. Wotherspoon, Supt. P. W.
S. C., Greenwood	.....4 p.m., Nov.	10..	60,000 sq. yds. street paving, 10,000 sq. yds. cement gutters, 12,000 lin. ft. granite curb, 10,000 lin. ft. storm sewers, 12 to 26-in., 25 manholes, 80 intake basins, etc.....	C. P. Ballenger, City Engr.
N. J., Newton	.....Nov.	11..	Improving macadam road.....	Harvey Snook, Co. Engr.
N. Y., Albany	.....1 p.m., Nov.	11..	Constructing 40 miles state highway.....	Edwin Duffey, Comr.
Ind., New Albany	.....Nov.	11..	Constructing 10,200 ft. road; cost, \$10,000.....	J. T. Miller, Co. Aud.
S. C., Charleston	.....11 a.m., Nov.	13..	Constructing roadway at Navy Yard.....	H. R. Stanford, Ch. Bur. Yds. & Dks.
Neb., Lincoln	.....2 p.m., Nov.	15..	Street paving in District No. 9.....	H. E. Wells, Co. Clk.
Tenn., Sweetwater	.....Nov.	15..	Street paving, cost \$5,000.....	W. T. Lenoir, Mayor
N. D., Medora	.....10 a.m., Nov.	15..	Constructing cut, fill and rip-rap at bridge.....	J. A. Berry, Co. Aud.
O., Cleveland Heights	.....noon, Nov.	15..	Grading, draining and paving with brick, asphalt or macadam and constructing sidewalks.....	F. A. Pease Engrg. Co., Cleveland.
Okla., Lawton	.....2 p.m., Nov.	17..	Grading streets.....	R. P. Sanders, Comr. Public Property.
Ala., Dothan	.....Nov.	18..	Constructing 42 miles sand-clay road.....	Co. Board of Revenue.
O., Shaker Heights	.....noon, Nov.	30..	Grading, draining and constructing sidewalks.....	C. A. Palmer, Vil. Clerk.
Neb., Hastings	.....Dec.	1..	Paving 50 blocks with vertical fiber brick or asphaltic concrete.....	W. H. Fuller, City Engineer.
Kan., Atchison	.....Mar.	1..	Paving several streets.....	V. L. King, City Clerk.
SEWERAGE				
Tex., San Benito	.....Oct.	30..	Constructing sewage disposal plant to cost about \$5,000.....	J. H. Lyons, Mayor.
Wis., Racine	.....10 a.m., Oct.	30..	Constructing 497 ft. 8-in. sewer and two manholes.....	P. H. Connolly, Chr. B. P. W.
Mo., Webb City	.....Nov.	1..	Laying three blocks sewer extension.....	L. E. Briggs, City Engr.
O., Alliance	.....Nov.	1..	Constructing sewage disposal plant, estimated cost \$40,000.....	Chester & Fleming, Engrs. Pittsburgh, Pa.
S. D., Huron	.....1 p.m., Nov.	1..	Constructing 2,530 ft. 8 and 10-in. sewer.....	S. S. Oviatt, City Aud.
N. Y., Greenwich	.....Nov.	1..	Constructing sewers.....	C. E. Perry, Engr., 36 State St., Albany.
Minn., St. Paul	.....10.30 a.m., Nov.	1..	Constructing sewers in several streets.....	Aug. Hohenstein, Pur. Agt.
Tex., Donna	.....Nov.	1..	Enlarging and improving canal system and installing pumping plant, cost \$425,000.....	D. H. Barr, Sec. Irr. Dist.
N. D., Wahpeton	.....7.30 p.m., Nov.	1..	Extending sewers in two districts.....	S. H. Murray, Co. Aud.
Ind., Anderson	.....2 p.m., Nov.	2..	Repairing tile drain.....	Charles Beck, Twp. Trustee.
Wis., Green Bay	.....10 a.m., Nov.	2..	Constructing 12-in. vit. pipe sewers in four streets.....	L. Findelsen, Chr. Sewer Com.
Neb., West Point	.....noon, Nov.	2..	Constructing sanitary sewer.....	August Hanft, City Clerk.
N. J., Perth Amboy	.....8.30 p.m., Nov.	3..	Constructing 12-in. vit. pipe sewer.....	G. M. Adair, St. Commr.
N. Y., Binghamton	.....4 p.m., Nov.	3..	Constructing vit. pipe sewers with manholes, catchbasins, etc.....	E. W. Foster, Clk. Bd. Con. & Sup.
O., Mansfield	.....noon, Nov.	3..	Constructing sewers and flush tank.....	O. Hursh, Dir. P. S.
R. I., Woonsocket	.....Nov.	3..	Constructing surface water drain.....	F. H. Mills, City Engr.
Minn., Morris	.....2 p.m., Nov.	3..	Digging & const. county ditch, cost \$4,600.....	C. R. Wolltham, Co. Aud.
N. Y., New York	.....2 p.m., Nov.	4..	Constructing tunnel relief sewer in West 46th street.....	M. M. Marks, Boro. Pres.
Minn., Roseau	.....4 p.m., Nov.	4..	Constructing drainage ditch.....	S. G. Bertilrud, Co. Aud.
Fla., Jacksonville	.....Nov.	4..	Constructing 484 ft. 8-in. c-i. sewer line.....	Chief Clk., Engineers Dept.
Fla., Miami	.....Nov.	4..	Motor-driven centrifugal sewage pump.....	B. Klyce, City Engr.
N. Y., Dunkirk	.....8 p.m., Nov.	4..	Constructing 8 to 15-in. sewers on several streets.....	A. D. Toomey, City Clerk.
Nev., Winnemucca	.....2 p.m., Nov.	5..	Constructing sewer system.....	J. W. Davey, Clk. Co. Comrs.
Ind., East Chicago	.....1.30 p.m., Nov.	5..	Constructing main sewer system.....	M. R. Schock, Chr. B. P. W.
Minn., Blue Earth	.....Nov.	5..	Constructing three county ditches, tile sewer and cast iron pipe, cost about \$40,000.....	J. L. Hering, Co. Aud.
Neb., Havelock	.....8 p.m., Nov.	5..	Constructing three sewer laterals.....	Asher Blount, City Clk.
Wis., Ripon	.....4 p.m., Nov.	5..	635 ft. 8-in. sewer.....	Jay E. Carter, City Clk.
Fla., Miami	.....7.30 p.m., Nov.	8..	Laying 1,430 ft. of 18 to 48-in. sewer.....	W. D. Moore, City Clerk.
N. Y., Yorktown Heights	.....Nov.	9..	Sewerage and sewage disposal plant at training school.....	L. F. Pilcher, State Architect, Albany.
S. C., Greenwood	.....4 p.m., Nov.	10..	Constructing 10,000 ft. of 12 to 26-in. storm sewers, 25 manholes, 80 intake basins, etc.....	C. P. Ballenger, City Engr.
Ill., Rock Island	.....Nov.	15..	Sewer system and sewage disposal plant.....	Wallace Trichler, City Engr.
O., Warrensville	.....Nov.	15..	Constructing sanitary sewers and paving with brick, asphalt or macadam.....	H. H. Canfield, Vil. Clk.
Mo., New Madrid	.....2 p.m., Nov.	15..	300,000 cu. yds. levee work.....	Miller Engrg Co., Little Rock, Ark.
O., Vermillion	.....noon, Nov.	16..	Constructing sanitary sewer system and disposal plant.....	Lewis Clattner, Vil. Clk.
Ia., Spencer	.....Nov.	23..	Change of date for drainage work.....	County Auditor.
Ia., Oakland	.....Nov.	23..	Constructing 13,200 ft. 8 to 15-in. sewers.....	E. F. Wentz, City Clk.
Ia., New Orleans	.....noon, Dec.	3..	Labor-material-percentage construction.....	Sewerage & Water Board.
WATER SUPPLY				
D. C., Washington	.....Oct.	30..	Steel water tower and tank.....	H. R. Stanford, Ch. Bur. Yds. & Docks.
O., Toledo	.....Noon, Oct.	30..	Furnishing c. i. water pipe.....	F. G. Respass, Sec. Pk. Comrs.
N. Y., Buffalo	.....Oct.	30..	Laying 12-in. high-pressure pipe line.....	F. G. Ward, Comr. P. W.
La., Oakdale	.....Nov.	1..	Water supply system, estimated cost \$30,000.....	R. E. Richards, City Sec.
Minn., St. Paul	.....10.30 a.m., Nov.	1..	Furnishing six cars calcium chloride.....	
Conn., Hartford	.....Nov.	1..	Clearing and grubbing about 830 acres of basin of Nepaug reservoir.....	C. M. Saville, Ch. Engr., Pilgards Bldg.
D. C., Washington	.....Nov.	2..	Wrought iron pipe, c. i. pipe, fittings, etc., for Navy Department.....	Bureau of Sup. & Accounts
Ill., Elmhurst	.....7.30 p.m., Nov.	3..	Reinforced concrete tower, pumping station and tank, reservoir and well house.....	Arthur H. Kochalsky, City Clk.
N. J., Perth Amboy	.....8.30 p.m., Nov.	3..	Constructing 40 x 60 brick addition to pump house.....	S. J. Mason, Engr.
N. Y., Leroy	.....Nov.	3..	Building 125,000-gal. elevated tank.....	J. P. Wells, Cons. Engr.
Tex., Galveston	.....5 p.m., Nov.	4..	Mechanical equipment for air pumping engine.....	John D. Kelley, City Secy.
Ida., Council	.....Nov.	5..	Water works to cost \$20,000, includes 18,000 ft. 4 to 8-in. pipe and concrete reservoir.....	R. F. Wood, Welsor, Engr.
Nev., Tonopah	.....5 p.m., Nov.	5..	Two 250,000-gal. tank foundations.....	W. A. Marsh, Chr. Co. Comms.
Fla., Jacksonville	.....noon, Nov.	8..	Constructing 50,000-gal. water tank on metal tower.....	F. W. Bruce, Ch. Engr.
Minn., International Falls	.....Nov.	8..	Constructing two 4-in. wells.....	Annie Shelland, Clk. Bd. Ed.
D. C., Washington	.....Nov.	9..	Furnishing two wooden water tanks.....	Bureau of Sup. & Accts., Navy Dept.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
N. Y.	Brooklyn	Nov. 9.	Brass cocks, check and gate valves.....	Bureau of Sup. & Accounts, Washington, D. C.
O.	Belleville	Nov. 9.	Deep well pump, has engine, 5 miles of main and storage reservoir	Smith & Boulay, Nasby Bldg., Toledo.
Neb.	Bayard	Nov. 11.	6,600 ft. 5-in. and 6,600 ft. 4 to 8-in. water mains and well..	Finley & Selzer, Engrs., Scotts-bluff.
O.	Columbus	Nov. 11.	Water softening equipment for Institution of Feeble-Minded	H. S. Riddle Cons. Engr., Ohio Bd. Administration.
O.	Shaker Heights	noon, Nov. 30.	Laying 10-in. water main.....	C. A. Palmer, Clk., 2855 Coventry Road.
O.	E. Youngstown	Dec. 1.	Water system; estimated cost, \$165,000.....	Carl Anderson, Vil. Clk.
La.	New Orleans	Dec. 3.	Laying water mains	F. S. Shields, Sec. Sewer and Water Board.

LIGHTING AND POWER

Minn.	St. Paul	10.30 a.m., Nov.	1.. Installing and maintaining gas street lamps, etc.	A. R. Callow, Comr. P. & S.
Cal.	Colton	7.30 p.m., Nov.	1.. Lighting transformers and meters.....	N. Davenport, City Clk.
N. Y.	Albany	2 p.m., Nov.	1.. Lamp posts for Plaza	Isadore Wachsmann, Sec. Bd. of Contract and Supply.
D. C.	Washington	Nov.	2.. Electrical supplies, wire, etc.....	Bureau of Sup. & Accts., Navy Dept.
Mo.	Poplar Bluff	2 p.m., Nov.	3.. Constructing municipal electric light and power plant, cost \$75,000	Fuller-Coult Co., Engrs., St. Louis.
N. D.	Fargo	10 a.m., Nov.	3.. Constructing white way.....	A. R. Watkins, City Aud.
N. Y.	Albany	noon, Nov.	8.. Furnishing and installing fixtures and electric lamps for county court house.....	Clerk, Board of Supv.
D. C.	Washington	10 a.m., Nov.	9.. Electrical equipment, oxygen compressor, etc., for Mare Island Navy Yard	Bureau of Sup. & Accts., Navy Dept.
D. C.	Washington	10 a.m., Nov.	17.. Central light and power plant.....	Supervising Architect.
Pa.	Philadelphia	noon, Nov. 22.	Furnishing electric lamps and lighting streets for 1916..	Robt. Gripps, Dir. Pub. Safety.

FIRE EQUIPMENT

Wyo.	Lusk	noon, Nov.	1.. 500 ft. 2 1/2-in. hose	D. E. Goddard, Town Clk.
N. Y.	Albany	3 p.m., Nov.	1.. Constructing fire alarm station.....	Isadore Wachsmann, Sec. Bd. Con. and Sup.
Pa.	Allentown	5 p.m., Nov.	3.. 2,000 to 5,000 ft. 2 1/2-in. fire hose and one 2-wheel hand-drawn hose cart	P. J. McNally, Clk.
O.	Columbus	noon, Nov.	4.. Seven motor-driven combinations, 2 motor-driven supply trucks, 2 2-wheel front drive tractors, 1 triple combination and changing and equipping present apparatus..	B. L. Bargar, Dir. P. S.
N. Y.	Plattsburgh	8 p.m., Nov.	4.. Installing telephone fire alarm system	E. Seymour, City Clerk.
N. J.	Paterson	8 p.m., Nov.	5.. Installing boiler on fire engine	F. H. Schielke, Chr. Fire Comm.
Fla.	Jacksonville	noon, Nov.	8.. Installing sprinkler system.....	F. W. Bruce, Ch. Engr.
D. C.	Washington	2 p.m., Nov.	8.. Constructing engine house.....	Chief Clk., Engineer Dept.
Minn.	Shakopee	8 p.m., Nov.	8.. Motor-driven fire engine and chemical.....	J. B. Strunk, Sec. Firemen's Relief Assn.
Wash.	Puget Sound	10 a.m., Nov.	9.. 7,200 ft. rubber fire hose.....	Navy Pay Office.
N. Y.	Rochester	10.30 a.m., Nov.	10.. Sprinklers for Iola sanitarium.....	H. W. Cutler, Architect, Cutler Bldg.
Va.	Front Royal	2 p.m., Nov.	15.. Constructing fire station.....	Constructing Quartermaster.
D. C.	Washington	2 p.m., Nov.	18.. Furnishing 25,000 ft. fire hose.....	Purchasing Officer, Rm. 320, District Building.

BRIDGES

Tex.	Dallas	10 a.m., Oct. 30.	Viaduct to cost \$135,000.....	County Commissioners
O.	Marion	noon, Oct. 30.	Building sub-structure for Clark bridge	V. Perle Garfield, Clk. Co. Com.
N. C.	Kinston	Nov.	1.. Constructing bridge over Neuse river; cost, \$10,000.....	City Commissioners.
Miss.	Columbus	Nov.	1.. One steel or concrete 100-ft. span and three wood bridges, totaling 165 ft; one concrete culvert	C. L. Wood, Engineer.
Tex.	Harrisburg	10 a.m., Nov.	1.. Constructing bridge over Bayou.....	H. L. Washburn, Co. Aud.
Cal.	Sacramento	2 p.m., Nov.	1.. Constructing 3-hinged arch span bridge 300 ft. long.....	A. B. Fletcher, State Hwy. Eng.
Kan.	Santa Fe	noon, Nov.	1.. Constructing 68-ft. wood pile bridge	County Clerk.
Kan.	Leavenworth	noon, Nov.	1.. Repairing De Soto bridge.....	W. J. Moore, Co. Clk.
Ind.	Jeffersonville	10 a.m., Nov.	1.. Repairing bridge	G. W. Stoner, Co. Aud.
Cal.	Fresno	2 p.m., Nov.	1.. Constructing four concrete retaining walls for concrete bridge	D. M. Barnwell, Clk. Co. Supv.
Cal.	Merced	Nov.	1.. Reinforced concrete bridge to cost \$6,000.....	A. E. Cowell, Co. Surv.
Ga.	Woolsey	Nov.	1.. 102-ft. span steel bridge.....	J. J. Davies, Clk. Co. Court, Fayetteville.
Miss.	Grenada	Nov.	1.. Constructing steel bridge.....	J. S. King, Clerk
N. D.	Jamestown	2 p.m., Nov.	2.. Steel bridge over James River.....	Andrew Blewett, Co. Aud.
Ind.	Shelbyville	10 a.m., Nov.	2.. Constructing reinforced concrete culvert.....	F. W. Fagel, Co. Aud.
Minn.	Park Rapids	2 p.m., Nov.	2.. Furnishing 21 corrugated metal culverts	Frank Helsel, Co. Aud.
N. J.	Paterson	2 p.m., Nov.	3.. Bridge extension	County Engineer.
Miss.	Leakesville	Nov.	3.. Constructing steel and iron highway bridge.....	S. R. McKay, Clk. Co. Supv.
Ind.	Wabash	1.30 p.m., Nov.	3.. Bridge over Wabash river	Dan Showalter, Co. Aud.
Miss.	Meridian	10.30 a.m., Nov.	3.. Constructing reinforced concrete bridge.....	J. B. Pinkston, Cons. Engr.
Ind.	Corydon	2 p.m., Nov.	3.. Constructing steel bridge	J. L. O'Bannon, Co. Aud.
Ill.	Bader	2 p.m., Nov.	3.. Steel or reinforced concrete bridge, cost about \$3,000.....	W. S. Henderson, Co. Hwy. Supt.
Cal.	Ventura	Nov.	4.. Two-span 80-ft. concrete bridge	City Clerk.
Kan.	Salina	Nov.	4.. 120-ft. span steel and reinforced concrete bridge.....	A. C. Anderson, Co. Clk.
Minn.	Roseau	4 p.m., Nov.	4.. Const. 53 wood highway bridges & 331 metal culverts..	S. G. Bertilrud, Co. Aud.
Pa.	Pittsburgh	noon, Nov.	5.. Service bridge and Poiree trestles at Dam. No. 10.....	U. S. Engineer's Office.
N. J.	Elizabeth	2.30 p.m., Nov.	5.. Furnish two cast iron culverts	J. L. Bauer, Co. Engr.
Kan.	Lawrence	noon, Nov.	6.. Constructing two bridges	County Clerk.
Kan.	Iola	noon, Nov.	10.. Replacing and repairing bridge.....	J. H. Brown, Chr. Co. Commr.
Cal.	Los Angeles	2 p.m., Nov.	15.. Constructing bridge over San Jose creek	H. L. Leland, Co. Clk.
La.	New Orleans	Nov. 16.	Steel frame concrete-covered viaduct.....	A. G. Ricks, Comr. Pub. Finance.
Md.	Cumberland	Nov. 18.	Reinforced concrete bridge to cost \$2,000.....	E. L. Williams, 10 N. Liberty.
Fla.	Tampa	Nov. 28.	Constructing wooden bridge over river.....	W. T. Culbreath, Clk. Co. Ct.
China	Canton	Dec.	7.. Steel bridge work for railway.....	R. W. Hunt Co., Cons. Engrs., Pittsburgh, Pa.

MISCELLANEOUS

Conn.	Bridgeport	Oct. 30.	Change of date for garbage collection contract	Board of Health.
D. C.	Washington	Nov.	1.. Three gasoline tractors of track-laying type.....	Chief of Ordnance, U. S. Army.
Minn.	St. Paul	10.30 a.m., Nov.	1.. Plumbing fittings for comfort station	Aug. Hohenstein, Pur. Agt.
Mass.	Saugus	8 p.m., Nov.	1.. Removal of ashes and garbage for 1916.....	T. D. Emmett, Sec. Bd. Health.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
D. C., Washington	Nov. 2	5,000 lbs. battery ammonium chloride; Portland cement; transformers	Bur. Sup. & Accts., Navy Dept.	
O., Youngstown	noon, Nov. 2	Furnishing 4,500 street signs and 1,000 sign brackets	H. C. Fox, Clk. Pub. Service.	
Fla., Pensacola	10 a.m., Nov. 2	One motor delivery wagon at Pensacola Navy Yard	S. McGowan, Paymaster Genl., U. S. N., Washington.	
Neb., Sidney	Nov. 4	Constructing city hall	B. M. Reynolds, Architect, North Platte	
O., Columbus	noon, Nov. 4	Purchasing waste paper and rags from rubbish disposal plant	G. A. Borden, Dir. P. S.	
D. C., Washington	2 p.m., Nov. 5	Placing 6 miles of fencing at National Park in North Dakota	Dept. of Agriculture, City Engineer.	
La., New Orleans	Nov. 9	Erecting asphalt repair plant	J. R. Curry, Co. Aud.	
Id., Boise	Noon, Nov. 10	Constructing court house and heating plant	F. C. Boggs, Gen. Pur. Off., Panama Canal.	
D. C., Washington	Nov. 16	Furnish and erect steel oil storage tank	U. S. Reclamation Service, Mills Bldg.	
Tex., El Paso	Nov. 17	Excavation work on several canals	Purchasing Officer, District Building.	
D. C., Washington	2 p.m., Nov. 18	Two 2-passenger automobiles for use of fire department	Supervising Architect	
D. C., Washington	3 p.m., Nov. 18	Extending and remodeling postoffice at Boise, Idaho	Supv. Arch't., Washington	
O., Elyria	3 p.m., Nov. 19	Construction complete of postoffice		

STREETS AND ROADS

Mobile, Ala.—Mobile County's Board of Revenue and Road Commissioners by vote of four to one has adopted resolution promising co-operation of this county with Baldwin County in construction of highway, ferries and bridges across delta between two counties.

Tucson, Ariz.—City Council has adopted plat showing land to be taken for widening of Sixth Ave. and bounding benefited district, and also passed resolution of intention to widen that street between Congress and Alameda Sts. Plan is to make Sixth Ave. as wide north of Congress St. as it now is on south side, taking land needed to widen it from west side of present street.

Martinez, Cal.—Paving of main business streets of Martinez is to begin within next 30 days. Plans and specifications are being prepared now. City Council is mapping out programme of street improvement that will keep pace with development of the new Martinez, which, before long, will have crowded city of yesterday off the map.

Ontario, Cal.—City Council has passed resolutions which will bring about in course of next 12 months paving of many miles of streets in this city, linking up, at city limits in all directions, state and county boulevards. Resolutions ordering work of improving east roadway of Euclid Ave. from G St. south, improving East A St. and Bon View Ave. and resolutions of intention for portion of West roadway of Euclid Ave. and State St., have been passed. Plans and specifications for State St. have been made.

Sacramento, Cal.—First official action towards calling bond election for \$1,600,000 for good roads in Sacramento County was taken Oct. 14 when Board of Supervisors unanimously voted to appoint F. B. McKevitt, George N. Randle and William S. Carruthers, members of Sacramento County Highway Commission. Action was taken under Savage Act, which provides commission shall formulate report designating roads to be constructed, and estimate of cost of each road to Board of Supervisors. On this report Supervisors shall set date on which the people shall vote on bond issue question.

San Jose, Cal.—Resolution has been adopted for improvement of William St.

Darien, Conn.—At special town meeting held here Oct. 21 it was unanimously voted to issue town bonds to amount of \$150,000 to build approximately ten miles of permanent concrete highways on the principal roads of township.

Washington, D. C.—The Bureau has received letter from man in Cuba who desires to learn prices of Cuban asphalt in this country and to what interests he could make proposals relative to an asphalt mine. No. 18,810, Bureau of Manufactures.

Green Cove Springs, Fla.—County Commissioners have signed contracts to let building of hard surface road from Orange Park to Putnam County line.

Merritt, Fla.—At recent meeting of delegates appointed to take steps toward bonding Second and Fourth districts of Brevard County for roads and bridges, following reports of committee on data and estimates were received and approved. The Second district (Merritt Island) committee recommended bond issue

for this district of \$70,000. Fifty thousand of this sum to go towards bridge and \$20,000 for improving island roads. The Fourth district committee recommended \$300,000 bond issue for this district, \$50,000 to go towards building the bridge from Cocoa to Merritt, and balance for roads and payment of outstanding warrants against special roads and bridge district.

Pensacola, Fla.—Taxpayers of Escambia County will be called upon to approve bond issue of \$1,000,000 on Feb. 1 for paved highways and concrete bridges throughout county. If paving is not adopted road system will be of hard surface highways, board to designate which after the result of special election if announced.

Rome, Ga.—The widening, grading and surfacing of Kingston Rd. from city limits past property of Anchor Duck Mills, will be begun by County Engineer Kelfer Lindsey in a short time.

Edwardsville, Ill.—Madison County, Ill., is agitating a bond issue to build hard-surface roads all over the county. Alton is strongly back of the movement.

Springfield, Ill.—Another good road plan, that of building extension east from Peoria road for two-thirds of a mile to site of proposed new powder factory of Western Cartridge Co., north of the city, is under consideration by County Highway Superintendent Edwin H. White and others who are interested in county's good road schemes. Proposed road would make it much easier for goods to be hauled from powder plant to C. & A. railroad and Illinois Traction system's line, both of which roads are adjacent to powder company's land.

Springfield, Ill.—The Cantrall road, now one of the worst stretches of highway in Sangamon County, is to be transformed for portion of way into one of best in county by state aid. Bids on concrete and brick pavement for 4,140 ft. of road were asked by Illinois State Highway Commission. The improvement is to cost, by engineer's estimate, exclusive of concrete furnished by state, \$14,460. The Cantrall road runs north from Springfield, coming into city from behind Oak Ridge cemetery. In advertisement for bids until 11 o'clock, Nov. 3, was allowed contractors to submit their figures.

Angola, Ind.—Highway improvement bonds in sum of \$8,800 will be sold Nov. 1 at court house. F. T. Dole is Treasurer of Steuben County.

Franklin, Ind.—Gravel road bonds to amount of \$5,400 were sold to Gavin L. Payne & Co., of Indianapolis, at \$47 premium.

Indianapolis, Ind.—Board of public works has adopted resolution for paving Senate Ave. from South to Merrill Sts., at estimated cost of \$13,740. It is planned to go through necessary proceedings and let contract as soon as possible, with view of starting work early next spring.

Indianapolis, Ind.—Permanent improvement of Sutherland Ave., from 34th St. to 38th St., and of 38th St., from Sutherland Ave. to Emerson Ave., the dividing line between Center and Warren townships, is asked in two petitions filed with board of county commissioners. Use of asphalt or concrete is requested in petitions. A hearing on petitions will be held Nov. 8. If petitions

are granted, cost of improvement will be met by township levy which will pay principal and interest on bonds issued for the improvement.

Indianapolis, Ind.—Resolution has been adopted by Board of Public Works for paving South Capitol Ave., between Merrill and McCarty Sts. Estimated cost is \$10,694.

Portland, Ind.—City Council received bids Oct. 13 for improvement of Ship St. from Main St. south to Second St. Contract for improvement will be awarded by Council at their meeting in two weeks. Bids are for brick on stone base with sand filler. Fitzmaurice & Beard bid on one course concrete streets. Property owners now have ten days in which to state to Council their preference of street. The bid of D. O. North of Blunt-ton was \$1.44 a sq. yd. for South Webster brick and \$1.47 for Ironstone block from Terre Haute; combined curb and gutter 50c. per lin. ft. with tile and 45c. per ft. without tile; protection curb, 30c. per ft.; 6x24 reinforced curb, 55c. per ft.; excavation, 30c. per cu. yd. The bid of Fitzmaurice & Beard on Dark Ironstone block, \$1.42 per sq. yd.; No. 1 Light Ironstone block, \$1.38; Medal block, \$1.43; combined curb and gutter with tile, 51c.; without tile, 46c.; protection curb, 25c. per ft.; 6x24 reinforced curb, 45c. per ft.; excavation, 25c. per yd. For a one course concrete street, \$11.35 per sq. yd. N. R. Griffith bid \$1.70 per sq. yd. for either Ironstone or South Webster block. On a concrete base, 10c. per sq. yd. extra; excavation, 30c. per yd.; combined curb and gutter, 45c. per ft.

Rochester, Ind.—Bidding against five other firms, Indiana Bank & Trust Co. of this city has obtained bond issue of \$65,900 for construction of four improved roads in Henry Township.

South Bend, Ind.—County Council has appropriated \$750 for purpose of marking roads of St. Joseph County, Ind., tremendous tourist travel of this season having shown necessity of system of this sort.

South Bend, Ind.—Means which will result in paving of Leeper Ave. from Howard to Angella Ave. have been decided upon at meeting of Board of Works.

Sullivan, Ind.—The People's State Bank of this city has bought issue of gravel roads bonds, amounting to \$11,084.

Vincennes, Ind.—The Illinois highway has decided to build two miles of brick or cement road on the west side of the Wabash River, across from Vincennes, Ind.

Council Bluffs, Ia.—City council is in favor of paving 14th Ave. to its east terminus from High St., a distance of two blocks. Paving is to be laid on it next spring when other stretches of paving are contracted for.

Dodge City, Kan.—Dodge City is to try experiment with concrete paving. City commission has passed resolution calling for concrete paving on Oak St., between Central and Ave. A, one block.

Mulberry, Kan.—City Council has adopted ordinance providing for paving of five blocks of Military Ave., the principal street. Work will be done this fall. Kind of paving has not been decided upon. A committee will investigate the merits of different kinds first.

Newton, Kan.—Resolution was passed at regular meeting of city commission for paving of East Broadway from Logan to Sherman Aves., two blocks, and for West Sixth St. from Poplar to the township line.

Salina, Kan.—Ordinance has been adopted providing for paving and excavating of Fifth St., in city of Salina, between south line of Walnut St. and north line of Prescott Ave., specifying manner of construction, providing for the cost thereof and manner of payment and letting contract therefor.

Carlisle, Ky.—County Judge James Mitchell has been notified by State Road Commissioner R. C. Terrill that contracts which were recently let by Fiscal Court of Nicholas County for reconstruction of Carlisle and Park's Ferry and the Carlisle and East Union turnpikes, have been rejected on account of high price. These bids were rejected by the Commissioner at request of three members of Fiscal Court. The Nicholas Fiscal Court will meet on the 26th day of October to receive bids for reconstruction of Carlisle and East Union and the Carlisle and Park's Ferry turnpikes and will also receive bids for pike machinery, rock crushers, steam rollers, etc.

Clay City, Ky.—The Fiscal Court has decided that sum being raised to spend on roads in county would be insufficient and petitions are now being circulated asking that vote be taken on issuing bonds for \$40,000 to build pikes in Powell county. In addition to this Fiscal Court decided to supplement this by \$10,000, which with State Aid fund, would leave \$100,000 to spend on roads, sufficient to pike county. Former petitions calling for bond issue of only \$25,000 have been recalled.

Lexington, Ky.—Ordinance has been adopted ordering improvement of West Main St. from east end of Main St. viaduct to east side of Cox St., at cost of abutting property owners of 10-year payment plan.

Fall River, Mass.—Board has passed loans of \$30,000 each for paving and sewer work.

Lynn, Mass.—Plans have been made for improving Rockaway St. by block paving.

Marlboro, Mass.—City of Marlboro has sold issue of \$17,000 4 per cent. paying bonds, dated July 1, 1915, to E. H. Rollins & Sons, at 100.887.

Taunton, Mass.—Order has been passed by municipal council authorizing the widening of Cohannet St. from Winthrop St. to Cohannet Court, according to plan which has been prepared by city engineer.

Corunna, Mich.—While Board of Supervisors has not as yet taken official action with relation to bonding of the county for approximately \$200,000 for construction of better highways, it is assured that resolution will be presented to submit question to electorate at spring election.

Flint, Mich.—A petition from residents of Durand asking that county build mile of improved road in Gaines township to connect with county line has been received and placed on file by Board of Supervisors. The Durand residents explained that Shiawassee County was building improved road to county line.

St. Ignace, Mich.—Board of Supervisors will be asked to call special election at as early a date as possible and submit

to people of Mackinac County question of bonding the county for sum of \$200,000 for county road purposes, \$100,000 of which to be sold at as early a date as possible and balance at such a time after Jan. 1, 1917, as same may be needed by Board of County Road Commissioners to properly carry on road work.

Duluth, Minn.—Before paving season starts next spring Commissioner Farrell, head of works division, plans to purchase another motor truck, an automobile oil sprayer and to have complete concrete testing laboratory opened in old Armory building. The two trucks will be used in hauling crushed rock and dirt wherever pavements are to be repaired, so that workmen will be able to start on improvements immediately after spring season opens. In addition, trucks will be used in improving roadways leading out of city. The automobile oil sprayer, which will cost approximately \$4,500, will be used in oiling all streets next summer.

St. Louis, Mo.—Board of public works is considering improvement of various streets.

Elizabeth, N. J.—Resolution has been passed asking City Council to appropriate money for paving of New Point road from Seventh St. to Fulton St., under provisions of city charter.

Lambertville, N. J.—The old Brunswick road, leading from this city to Hopewell, via Woodville, may be one of early highways improved, either by state or local aid, judging from interest project is receiving in Hopewell.

Long Branch, N. J.—Resolution calling upon Board of Freeholders of Monmouth County to take immediate steps for permanently improving that stretch of heavily travel thoroughfare from dividing line of Middlesex and Monmouth Counties, through Keyport and Middletown into Red Bank, has been passed. The Middlesex County Board of Freeholders have made provisions for permanent paving of main road leading through South Amboy and Morgan to dividing line between two counties, at or near Keyport.

New Brunswick, N. J.—Bids have been received for two road bids, but no award was made in either. For macadamizing Amboy Ave. from Spa Springs to Myrtle Ave., Perth Amboy, bids were as follows: James Sheehan, \$31,694.51; T. F. Dunigan, \$29,148.07; Liddle & Pfeiffer, \$29,463.18; T. H. Riddle, \$32,367.62; Magher & Smith, \$31,436.91. For macadamizing of New Brunswick Ave. from Florida Grove to Mitchell St., Perth Amboy, the bidders were: Conrad Sebolt, \$6,447.60; J. Sheehan, \$7,464.40; Liddle & Pfeiffer, \$6,394.24; T. H. Riddle, \$7,601.48; T. F. Dunigan, \$5,749.16.

Perth Amboy, N. J.—Bids will be received until 4 p. m., Oct. 27, 1915, by J. A. Rhodes, City Treasurer, at office of City Treasurer, Perth Amboy, N. J., for purchase of \$138,000 4½ per cent. coupon street improvement bonds of denomination of \$1,000 each, to be dated June 1, 1915.

Wildwood, N. J.—Plans are well under way for linking up all South Jersey shore resorts by bridge and boulevard system extending from Cape May to Atlantic City.

Woodbridge, N. J.—A number of property owners of township will meet members of Board of Freeholders for purpose of discussing adoption of sections of thoroughfares in township as county

roads and have county improve them. It is proposed to establish county road along Rahway Ave., from Presbyterian Church around monument and up Main St. as far as King George's road. It is also proposed to have county adopt section of Chain a Hills road, between Isselin and Colonia, as county road, with view of endeavoring to eliminate two dangerous railroad grade crossings.

Albany, N. Y.—Edwin Duffey, State Commissioner of Highways, will open bids at Albany, Oct. 26, for building of Schenectady-Duanesburg, Part 2, highway in Schenectady County. This contract was previously awarded to Curran Corporation, but has been cancelled by Commission because of failure of contractors to pursue the work. Estimated cost of improvement is \$53,800.

Canajoharie, N. Y.—At special meeting of Board of Supervisors held at Fonda, revised plans and specifications were approved for construction of Akin-Johnstown road, with waterbound macadam, covering distance of about three miles, leading from turnpike at Fort Johnson to Mohawk town line, at cost of \$9,550. Of this sum town of Amsterdam will pay \$6,207.50 and county \$3,342.50.

New York City, N. Y.—Borough President Marks has announced that following list of streets are about to be repaved and he requests that residents on these streets take notice that any desired subsurface connections for gas, electricity, steam or water should be made at once, for after the new pavement is laid no cut therein will be permitted for one year, except in case of accident. New type signs with this warning are now being placed at the corners of the streets about to be paved. Asphalt—Arden St., Nagle Ave. to Sherman Ave.; 161st St., Fort Washington Ave. to Riverside Drive; Lexington Ave., 35th St. to 41st St.; Broadway, west side, 108th to 110th St. Granite—13th St., 3d to 4th Ave.; Front St., Whitehall St. to Coenties Slip, and Old Slip to Fulton St.; 55th St., 11th Ave. to 12th Ave.; 18th St., 6th Ave. to 7th Ave.

Riverhead, L. I., N. Y.—Indications are that Suffolk County will spend more than \$304,000 on highway work for 1916, and it would not be surprising if at least a half million dollars spent, exclusive of amounts to be spent by State and county combined on improved roads.

Rome, N. Y.—Board of Public Works have held a special meeting to take action on final estimate for paving of Lawrence St. with bitulithic pavement. Estimate of City Engineer Plunkett is \$22,264.98, and bond of Warren Brothers' Co. was fixed at \$7,000.

Syracuse, N. Y.—A plan for a State Fair boulevard approach through Lakeview Ave. to connect with roadway to be constructed by state to State Fair grounds has been approved by Syracuse Planning Commission.

Greenville, N. C.—Election will be held Dec. 14 to vote on question of issuing 5 per cent. 30-year Chocod township road bonds in sum of \$50,000.

Hickory, N. C.—At meeting of City Council Oct. 19 it was decided to let the contract for grading and topsolling Highland Ave. from Ninth Ave. to Fifth St. and to put down concrete sidewalk on north side of this street.

Shelby, N. C.—The second attempt to build good roads in No. 3 township was successful Oct. 16, in election for \$30,000 6 per cent bonds. The vote was 172 to 48. Highway commissioners elected were W. C. Sarraff, George B. Patterson and J. C. Bridges.

Cincinnati, O.—At meeting of Council motion for plan and estimate for widening Reading road and Florence Ave. will be introduced by Councilman-at-Large Martin Daly.

Mansfield, O.—Realizing necessity of good roads, people of Weller, Butler, Bloominggrove and Cass Townships are asking for brick or concrete road 10 miles long, starting west from Olivesburg and running to Richland or Planktown, where it would join Shiloh Pike. The road would be cross county highway, joining Ashland and Mansfield Pike at Olivesburg with a pike leading through Shiloh and joining other pikes. The road would pass through Shenandoah and Rome.

Toledo, O.—Resolution has been adopted directing director of public service to have prepared plans, legislation, etc., for the grading of the alley between Main St. and Platt St., from Second St. to Fourth St. Also resolution directing the director of public service to have prepared plans, legislation, etc., for grad-

Brooklyn, N. Y.—Following are itemized bids of four lowest bidders opened Sept. 29 by L. H. Pounds, Boro. Pres., for repaving with granite Broadway, from Havemeyer St. to Patchen Ave.: (1) Charles A. Myers Contr. Co., Staggs St. and Morgan Ave., \$114,286; (2) Rosenthal Eng. & Contr. Co., 165 Hooper St., \$119,147; (3) Mathew T. Meagher, 15 Orient Ave., \$121,871; (4) Frank J. Gallagher, 49 Park Pl., \$122,102.

	(1)	(2)	(3)	(4)
450 lin. ft. old curbstone reset in concrete.....	\$0.60	\$1.25	\$0.90	\$0.60
1,225 lin. ft. new curbstone set in concrete.....	1.20	1.25	0.90	0.98
2,990 lin. ft. granite heading stones set in concrete.....	0.98	0.90	0.80	1.00
1,990 sq. yd. asphalt pavt. outside railroad area (no maintenance).....	0.85	1.10	0.85	1.00
40 sq. yd. asphalt pavt. within railroad area (no maintenance).....	0.85	1.10	0.85	1.00
4,585 cu. yd. concrete outside railroad area.....	3.85	4.75	3.90	5.10
792 cu. yd. concrete within railroad area.....	0.01	0.01	3.90	2.20
27,529 sq. yd. Grade 1 granite pavt. with joint filler of coal tar pitch and sand, outside railroad area (no maintenance).....	2.63	2.59	2.88	2.69
4,780 sq. yd. Grade 1 granite pavt. with joint filler of coal tar pitch and sand, within railroad area (no maintenance).....	3.25	3.37	2.88	2.69
60 sq. yd. adjacent pavt. to be relaid.....	1.00	2.50	1.00	1.60
73 new iron sewer basin heads.....	30.00	40.00	29.00	40.00
19 new sewer manhole covers.....	2.50	4.00	2.50	7.00
2 new covers and heads for sewer manholes.....	10.00	20.00	11.00	15.00

ing and paving of Case St., from Clarence Ave. to Millard Ave.

Youngstown, O.—Resolution has been adopted for paving of Crescent St.

Portland, Ore.—City improvement bonds amounting to \$175,000 are to be sold as soon as they can be advertised, according to ordinance passed by council.

Portland, Ore.—Purchase of auto flushing machine is being considered.

Salem, Ore.—Upon condition that Wasco County votes approximately \$260,000 for extension of Columbia Highway from Hood River to The Dalles, Highway Commission has agreed to appropriate \$90,000 of state highway fund for construction of Mosier link, consisting of four miles. Half of sum is to be apportioned from 1916 fund, and half from 1917 fund. Construction work can commence as soon as county votes for bond issue. Commission has also decided to apportion \$10,000 in experimentation in road building in Crook County with cinders from old lava cone, provided that county would appropriate like sum.

Philadelphia, Pa.—Extensive street improvements will be made in consequence of contracts which were awarded Oct. 22 by Director Cooke of department of public works. Aggregate cost of work will be about \$200,000. Work to be done includes grading, paving and repaving with various kinds of material and surfacing and resurfacing. The biggest of paving jobs is to be done by the Union Paving Co. Its contract calls for paving with asphalt Jasper St., between Sedgley and Frankford Ave. Cost of this work will be \$16,978.55.

Greenwood, S. C.—Bids will be received by paving commission until 4 p. m., Nov. 10, for furnishing all labor, material and equipment necessary to construct complete street paving. Work will consist of about 60,000 sq. yds. street paving, 10,000 sq. yds. cement gutters, 12,000 lin. ft. granite curb, 10,000 lin. ft. storm sewers from 12-in. to 18-in., 25 manholes, 80 intake basins, etc. C. P. Ballenger is Engr., and A. S. Hartzog is Mayor.

Chattanooga, Tenn.—The Chattanooga chamber of commerce has united with commercial bodies of Birmingham and Gadsden, Ala., to build pike road from Chattanooga to Birmingham via Gadsden, distance of 151 miles. A meeting to discuss plans for such a project is to be held at Gadsden early in November. Idea is to follow Rome route of Dixie highway to Trion and then across to Gadsden and thence to Birmingham.

Park City, Tenn.—It is expected that special meeting of Park City Council will be held shortly for purpose of receiving bids on paving of Magnolia Ave. Street committee, under direction of C. A. Nickerson and engineering department, headed by W. A. Park, is arranging specifications and as soon as these have been completed special meeting will be held. The Magnolia Ave. paving will \$60,000.

extend from Park Ave. viaduct to the corporate limits near Chilhowee Park. Total distance is 10,400 ft., which is almost as much as paving work on Washington and Jackson Aves. combined. It is embodied in ordinance for creating of improvement district out of Magnolia Ave., that street shall be paved with sheet asphalt. A bond sale amounting to \$103,000 has been made for maintenance of this work. Street will be paved from curb to curb.

Clint, Tex.—Bond issue has been voted for good roads.

Corpus Christi, Tex.—Paving of Third St. with bitulithic is petitioned for.

Fort Worth, Tex.—Five streets have been ordered paved by City Commission, following city engineer's report of majority frontage represented in petitions for improvement. Fifth Ave. from Lilac St. to Jessamine St., and Jessamine St. from Fifth Ave. to Sixth Ave. will be paved with bitulithic. Petitions showed signed frontage totaled 56 per cent. Jarvis St. and Sunset and Daggett Aves. will be paved with asphalt macadam, petitions showing signed frontage of 69.6 per cent.

Fredericksburg, Tex.—County will vote Nov. 7 on question of issuing road bonds in sum of \$300,000.

Tyler, Tex.—The Commissioners' Court has issued order for election to determine whether or not good roads bond issue of \$100,000 will be voted, embracing territory around Arp, Omen and Troup.

Portsmouth, Va.—The Sixth Ward Local Improvement Board has asked for a special bond issue of \$45,000 with which to do some paving during next year. Their request was referred to finance committee for consideration.

Moundsville, W. Va.—City will pave with vitrified paving brick or block and curb with cement Seventh St. from Lafayette to Western Ave. and Western Ave. from Seventh St. north to end of present brick pavement; O. B. Bonar, City Clerk, receives bids until Oct. 23; bids received for concrete base, gravel base, cement filler, sand filler and travertine filler. Alex. Purdy is City Engr.

Wellburg, W. Va.—Brooke County Commissioners are reported as contemplating election to vote on \$500,000 road bonds.

Rhineland, Wis.—County Board of Oneida County, Wis., has the proposition up for consideration of building 200 miles of road, this being deemed necessary to insure continued development.

CONTRACTS AWARDED.

Camden, Ala.—To Rawlingson Construction Co., Luverne, at \$7,635, for five miles of road in eastern section of Wilcox County.

Linden, Ala.—For constructing road from Hale County line to Dayton to Harvey & Co., Memphis, Tenn., at about \$60,000.

Vernon, Ala.—Commissioners' Court has let contract to G. B. Edgar to construct road from Sulligent to Marion county line, a distance of about 18 miles. Work has also been started on road from Vernon to Fayette, on road from Vernon to Kennedy, and on road from Vernon to Millport. Contract was let some time ago for construction of road from Vernon to Mississippi line, but work has not been begun on this as yet.

Arcadia, Cal.—For approximately 16 miles of oiled macadam roadway and 10,000 ft. of concrete curb and gutter 3 lowest bids were as follows: E. A. Baker, \$122,998; Rogers Bros. Co., \$130,787; Andrew Holloway, \$131,628.

East San Diego, Cal.—To M. D. Goodbody, at \$39,607.02, for improving Hugo Ave. Works consists of 36,403 cu. yds. excavation, 40,714 cu. yds. embankment, 4,905 cu. yds. decomposed granite, 67,945 sq. ft. walk, 13,232 ft. curb, 13,392 sq. ft. cobble gutter, 40 ft. curb bar, etc.

Los Angeles, Cal.—For improvement of Loveth St., to Fairchild-Gilmore-Wilton Co., at following bids: 1 5-10 cts. per sq. ft. for grading to sub-grade, Specifications No. 99; 16 9-10 cts. per sq. ft. for bitulithic paving, Specifications No. 99; 13 cts. per sq. ft. for oiled macadam repaving, Specifications No. 105; 30 cts. per lin. ft. for cement curb, Class A, Specifications No. 88; 18 cts. per sq. ft. for concrete gutter, Specifications No. 91; 40 cts. per sq. ft. for granite block gutter, Specifications No. 71; \$255 for storm drain and appurtenances, complete, at Cummings St. and 4th St., Specifications No. 87; \$50 for reinforced concrete culvert, complete, at Cummings St. and 4th St., Specifications No. 87; \$312 for storm drains and appurtenances at St. Louis St. and 4th St., complete, Specifications No. 87; \$300 for storm drains and appurtenances at Chicago St. and 4th St., complete, Specifications No. 87; \$550 for storm drains and appurtenances, at Evergreen Ave. and 4th St., complete, Specifications No. 87; \$115 for storm drains and appurtenances, between Cummings St. and St. Louis St., complete, Specifications No. 87; \$97 for culvert at Savannah St. and 4th St., complete, Specifications No. 87; \$97 for culvert at Evergreen Ave. and 4th St., complete, Specifications No. 87.

Sanger, Cal.—For three miles macadam pavements, to M. Haynes, Oakland, at \$23,801.

Hartford, Conn.—To Union Paving Co., Schenectady, at \$2,981, for constructing 10,418 ft. bituminous concrete road in North Haven. To Louis Longhi & Bro., Torrington, at \$11,191, for constructing 10,850 ft. graded construction in Brookfield on Danbury road, and to Robert S. Daley Contr. Co., New Haven, at \$28,448, for constructing 13,806 ft. bituminous macadam on Main St. and Congress and Savin Aves., in Orange.

Lamar, Colo.—To Filom & Ford, city, contract by county for grading and graveling portion of Santa Fe Trail, for \$4,200. Work calls for 8,000 cu. yds. of grading, sub-grade and 4,000 cu. yds. of gravel surfacing 6 ins. deep and 20-ft. roadway.

Boise, Ida.—For constructing 25 miles state highway to Reese & Munson, Blackfoot, Ida., at about \$26,500.

Indianapolis, Ind.—James Kervan and Joseph G. Hayes, county commissioners, attended joint meeting of boards of commissioners of Marion and Johnson County, at Franklin. A contract was awarded to John W. Murphy, of Franklin, for the construction of the Wheatcraft road, on the county line, three-quarters of a mile in length. The contract price was \$4,700.

Newton, Kan.—Contract was awarded to A. Jaicks Construction Co. for paving of East Broadway from Kansas Ave. to Logan, four blocks.

Salina, Kan.—Eleventh St. may have side-cut brick paving with asphalt filler. A resolution was passed ordering paving in under special law giving cities a right to do this on intervening or connecting blocks between parallel paved streets. Contract was then let to Watts & Amerman on their last spring's bid, 33 cts. for excavation and \$1.72 for paving around trucks.

Central City, Ky.—Fiscal Court has let contract to build four miles of pike this year, under state aid law. W. S. Martin, of Evansville, got contract to do the work and Tri-State Stone Co., of Cerulean, will furnish the rock. The cost will be about \$5,000 per mile, making \$25,000 in all. The state is to give \$7,500, the county will give \$7,500, and property holders who are to be benefited will give \$5,000. All of the money will be spent around Greenville. One mile of the

Dayton, Tenn.—Following are itemized prices of four lowest bidders for paving, etc., received Sept. 23 by County Comm: (1) J. A. Kries & Co.; (2) Freemans-Robins Co.; (3) Boyd Williams; (4) Oliver Hill Constr. Co.

	(1)	(2)	(3)	(4)
Clearing, 200 acres	\$18.00	\$10.00	\$15.00	Free
Grubbing, 125 acres	30.00	30.00	30.00	Free
Earth, 300,000 cu. yd.	.21	.21	.21	.24
Loose rock, 110,000 cu. yd.	.30	.25	.30	.24
Solid rock, 40,000 cu. yd.	.70	.70	.70	.70
Screened gravel, 8,500 cu. yd.	.95	1.00	1.00	1.00
Pit-run gravel, 8,000 cu. yd.	.95	.85	.90	.90
Screened chert, 8,500 cu. yd.	1.50	1.15	1.10	1.05
Pit-run chert, 30,000 cu. yd.	.90	.90	.90	.90
Limestone, 12,000 cu. yd.	1.60	1.60	1.55	1.80
Rip-rap, 600 cu. yd.	1.25	1.00	1.00	1.00
Concrete, 2,500 cu. yd.	7.40	7.00	6.75	7.00
Installing Corrugated Culverts:				
12-in. 500 lin. ft.	.10	.12	.12	.12
15-in. 800 lin. ft.	.12	.15	.15	.15
18-in. 500 lin. ft.	.15	.18	.18	.18
24-in. 400 lin. ft.	.20	.24	.24	.24
Installing Concrete Pipe:				
12-in. 500 lin. ft.	.20	.15	.12	.12
15-in. 800 lin. ft.	.25	.20	.15	.15
18-in. 500 lin. ft.	.35	.25	.18	.18
24-in. 400 lin. ft.	.45	.35	.24	.24
Installing Vitrified Pipe:				
12-in. 500 lin. ft.	.20	.15	.12	.12
15-in. 800 lin. ft.	.20	.20	.15	.15
18-in. 500 lin. ft.	.30	.25	.18	.18
24-in. 400 lin. ft.	.40	.35	.24	.24
30-in. 350 lin. ft.	.50	.40	.30	.30
Force Account:				
Teams	3.50	4.00	3.50	3.85
Foremen	2.50	3.00	3.00	3.00
Laborers	1.55	1.65	1.50	1.50
Sum of \$250,000 is available for this work.				

Drakesboro road will be piked; two miles of the Madisonville road and 1 2-10 miles of the Russellville road.

Mayfield, Ky.—For improving 10 miles roads to Mr. Crissup, Humboldt, Tenn., at \$30,000.

New Albany, Ky.—Board of County Commissioners in New Albany have awarded to W. F. Woodruff, of Louisville, the contract for construction of Grant Line road from McDonald lane to St. Joseph road, a distance of 2 miles and 30 feet. Contract price is \$13,987.43. There was one other bid, that of Alex. Stabler, which was \$13,893. Highway will be improved under provision of state three-mile free gravel road law.

Mendota, Minn.—To T. W. Keys, La Salle, at \$13,935.80, for paving 11th St. from Joliet to Hennepin; Hennepin from 9th to 11th and 10th St. from Hennepin to Tonti.

St. Paul, Minn.—For grading and improving at Louth St. to Christ Johnson, at \$773.90 and for improving Sheldon Ave. to Thornton Bros., at \$587.

Ackerman, Miss.—For constructing concrete sidewalks, by city, to W. L. Damon, Okolona, at about \$25,000.

Meridian, Miss.—Ordinance has been passed awarding contract for furnishing materials and labor for construction of concrete curbs and gutters and doing of certain grading on certain streets and avenues in the city of Meridian to John E. Wright.

Cranford, N. J.—Township committee has awarded contract to lay curbs and gutters in Union Ave. from Forrest Ave. to Elizabeth Ave. to Elmer Moore at \$940. Other bids: Masso & DeFazio, \$1,140; R. L. Shearer, \$990; Schuler Cement Co., \$1,016. Contract to build approaches to new Union Ave. bridge was awarded to C. Massa at \$1,626.50. Weldon Contracting Co. bid \$1,900.

Irvington, N. J.—For paving Lyon Ave. to Northern Construction Co., 665 Broad St., Newark, at \$62,070.

Montclair, N. J.—To Standard Bitulithic Paving Co. for repaving Valley road, at \$86,450.

Newark, N. J.—The contracting for resurfacing with asphalt of Sussex Ave., between Summit and Warren Sts., has been awarded to W. T. S. Critchfield, of Bayonne, at \$23,850. Ralph Sangiovanni was given contract for paving of Cypress St., west of Fabian place, at \$1,650. For paving of Chelsea Ave., from South Orange Ave. to the city line, with asphalt, award was made to Northern Construction Co. at \$10,512.25. All these were the low bidders.

New Brunswick, N. J.—Contractor Thomas F. Dunigan, of Woodbridge, was lowest bidder Oct. 18 on two Perth Amboy road jobs, to be given out by Board of Freeholders. The thoroughfares to be improved are Amboy Ave., from the city line at Spa Springs, to Myrtle Ave., a distance of 1.2 miles, and New Brunswick Ave., from the Florida Grove road to Mitchel Place, Perth Amboy, a distance of about 1,600 ft. Mr. Dunigan's bid on the Amboy Ave. job was \$29,148.07, only \$300 lower than the proposal submitted by Liddle & Pfeiffer, of Perth Amboy. Mr. Dunigan's bid was \$5,749.16 on New Brunswick Ave. improvement, which was \$600 lower than the bid of Liddle & Pfeiffer. The contracts were not awarded. Following were the bids received on the Amboy Ave. job: James Sheehan of New Brunswick, \$31,694.51; T. F. Dunigan, \$29,148.07; Liddle & Pfeiffer, \$29,463.18; T. Harry Riddle of New Brunswick, \$32,367.62; Meagher & Smith of Perth Amboy, \$31,436.91. Bids on the New Brunswick Ave. job were as follows: Conrad Seboldt of New Brunswick, \$6,447.60; James Sheehan of New Brunswick, \$7,464.40; Liddle & Pfeiffer, \$6,394.24; T. Harry Riddle, of New Brunswick, \$7,501.48; T. F. Dunigan, \$5,749.16.

Carthage, N. Y.—John B. Leach, of this village, has been awarded contract for construction of curbing in State St. and will commence operations at once. The contract calls for 45 cts. per lin. ft.

Farmingdale, L. I., N. Y.—By trustees New York State School of Agriculture of Long Island, for laying cement walks, curbs and crossings on grounds of said school at Farmingdale, to Delta Contracting Co., of Jamaica, N. Y.

Herkimer, N. Y.—To the B. F. S. Co. of Herkimer, at \$48,803, for building of first road to be constructed under new county system. Road will be 7.78 miles in length, running from Eagle Bay to Big Moose.

Mineola, L. I., N. Y.—The Board of Supervisors have accepted bid of Edward R. Dalton, of Port Washington, in sum

of \$12,085.97, for construction of sidewalks and for other improvements on Court House grounds here.

Peekskill, N. Y.—Contract has been awarded to Elgin Motor Sweeper Co., Elgin, Ill., for one motor sweeper.

Rochester, N. Y.—By Board of Contract and Supply, for Bradburn St. asphalt pavement, to Whitmore, Rauber & Vicinus, at \$5,658.

Kinston, N. C.—To West Construction Co., Chattanooga, to pave 50½ blocks with Bermudez Lake sheet asphalt on concrete base to cost \$140,000 to \$160,000.

Dayton, Tenn.—For relocating, grading, improving and macadamizing county highways, about 100 miles grading and 40 miles macadamizing, to Freeman-Robbins Co., Knoxville, Tenn., at \$209,771.

Belton, Tex.—Commissioners' Court has awarded contract for work of road improvement to Rogers Construction Co. of Rogers. Bonds issued by Rogers district for improvement of their highway amount to \$250,000 with interest accrued since July 12 of this year.

Galveston, Tex.—Capt. W. H. Haden, Galveston, contractor, has received contract for sale and delivery of 45,000 cu. yds. of mudshell to Road District No. 2 of Brazoria, for use in connection with construction of more improved roads in that county. Good roads are being built in Brazoria County with proceeds of a \$103,000 bond issue, and contract just let is to supplement and connect with roads constructed in districts Nos. 3 and 6 of Brazoria County. At present the Haden concern is working on application of material to about 30 miles in Road District No. 6 and it also furnished material for about 40 miles in District No. 3.

Taylor, Tex.—Following are itemized bids of successful bidders for paving. The work complete requires about 7,500 cu. yd. macadam excav., 35,000 cu. yds. earth excav.; 120,000 cu. yds. paving, 500 lin. ft. combined curb and gutter; 1,000 lin. ft. old curb reset; 12,000 sq. ft. concrete sidewalks; 6,500 lin. ft. 3x10 and 6,500 lin. ft. 3x8 in. oak headers; 200 cu. yd. extra concrete; Uvalde Rock Asphalt Co., San Antonio (approximately 40,000 sq. yds.) macadam excav., 50 cts.; earth excav., 40 cts.; Uvalde rock asphalt, 5-in. base, \$1.84; combined curb and gutter, 56 cts.; 18-in. gutter, 25 cts.; resetting old curb and gutter, 25 cts.; sidewalks, 13 cts.; headers, 3x10-in., 30 cts.; 3x8-in., 16 cts.; extra concrete, \$5.80; Kaw Paving Co., Topeka, Kan. (approximately 100,000 sq. yds.) macadam excav., 32 cts.; earth excav., 27 cts.; asphaltic concrete (Texaco), 4-in., \$1.30; 5-in., \$1.40; combined curb and gutter, 52 cts.; 18-in. gutter, 25 cts.; resetting old curb and gutter, 30 cts.; sidewalks, 11 cts.; headers, 3x10 in., 12 cts.; 3x8 in., 10 cts.; extra concrete, \$5.50.

Temple, Tex.—Commissioners' Court have awarded contract for road work in Rogers district to Rogers Construction Co., through its representative, Mr. J. H. Ware. H. C. Poe, of Temple State Bank, has purchased the \$250,000 bonds for this work, paying therefor \$253,333.33, or premium of \$3,333.33.

Clarksburg, W. Va.—By city for paving N. 4th St. to Keeley Bros., Clarksburg. A. T. Bichsop is City Clk.

Moundsville, W. Va.—To Stringer & Springer of Wheeling, contract for improvement of Grant Ave. and 4th St. with cement curb and street paving, for about \$7,000.

Olympia, Wash.—State highway board has formally awarded two contracts for road work. The General Construction Co. of Spokane will grade, drain and surface stretch on Inland Empire highway between Waitesburg and Dayton for \$13,242.90. W. G. Mulligan Co. of Spokane was awarded contract for the 17.3-mile strip between Colfax and Rosalia on Inland Empire highway at \$21,120. This is surfacing and graveling. Board also decided to go ahead with force account work on state road No. 8, between Cooks and Stevenson in Skamania county, a distance of 4½ miles. This is along the S. P. & S. railroad and is heavy blasting. There is \$45,000 appropriated for this job. Samuel Murchison will superintend the work.

Ashland, Wis.—By Highway Commission, to Fish & O'Connor, of Eagle River, for grading 16 miles of road at \$8,778.

Chiopeva Falls, Wis.—For clearing, grubbing, breaking and grading of new trunk line road from the Will Marquardt corner to the David Schnoor corner, to Geo. Hatch, at approximately \$1,750.

Tomah, Wis.—To Geo. R. Keachie, of

Madison, contract at \$2,789 for construction of 1,950 sq. yds. brick paving complete with concrete gutter.

SEWERAGE

Auburn, Cal.—Ordinance calling special election for purpose of voting on \$22,000 bond issue, for extending city sewers, constructing septic tank, purchasing three fire trucks and installing fire alarm system, has been passed by City Trustees. The election is to be held Nov. 16. The issue will be divided into three propositions, \$5,000 for purchase of fire trucks, \$2,000 for installation of fire alarm system, and \$15,000 for the extension of sewer and the construction of a septic tank.

Oak Park, Cal.—Joseph E. Tempest of City Engineer's office will outline plan for alley sewers at special meeting of Executive Board of Oak Park Business Men's Association. City Government is anxious to get alley sewers in central Oak Park laid and connected up for domestic service before heavy winter weather arrives. Engineer's office has taken territory bounded by Y St., Lower Stockton Avenue, Third Avenue, East Avenue, Park Avenue, 37th Street, and has planned alley sewers that will flow into lateral sewers which were laid in this district more than two years ago. It is estimated that six miles of alley sewers will be required to cover this territory.

Streator, Ill.—Bids for city hall sewer have been opened at meeting and read by City Clerk Ferguson and were as follows: John Scofield, 75c. per ft.; R. T. Shaw, entire contract for \$277.50; Ideal Heating & Plumbing Co., entire contract for \$205. Bids were referred to finance committee and public building and grounds committee.

Portland, Ind.—Council will receive bids for construction of Spruce alley sewer on Nov. 1.

Lawrence, Kan.—Petition has been filed for sewer on alley line south of 13th St.

Pittsburg, Kan.—Resolution has been adopted for construction of 8-in. tile sewer lateral in Sewer Lateral District No. 14-B in Main Sewer District No. 2, beginning at a manhole in Sewer Lateral No. 13 in Main Sewer District No. 3, said manhole being in the alley between 20th and 21st Sts. east of Joplin Ave., thence west in the alley between 20th St. and 21st St. to within 15 ft. of Locust St.

Salina, Kan.—Contracts for winter sewer work may be called for soon. Between 2,000 and 3,000 ft. has been called for from various portions of city and lot will probably be bunched in ordinance at next meeting. The council seemed disposed to give sewers where residents are supplied with water and desire connections.

Lexington, Ky.—Election will be held Nov. 2, 1915, for voting on \$350,000 bond issue for extension and improvements to storm water and sanitary sewage system of city.

Fall River, Mass.—Board has passed loans of \$30,000 for sewer and paving work.

Flint, Mich.—Petitions for sewers and water on Mabel, Bennett and Bush St. have been referred to sewer committee and water commission respectively.

Flint, Mich.—Plans and specifications have been adopted for construction of sanitary sewer on Beach St. from 9th to 10th St.

Duluth, Minn.—Sanitary sewers will be ordered in Gary St., from 101st Ave. west to a point 100 ft. west and in Parkland Ave., from Eden lane to Belmont road.

Waynesboro, Miss.—Board of Alderman of Waynesboro have given notice that they will issue \$3,000 additional school building bonds for purpose of installing sewer system for new \$12,000 brick school building and for seating the building.

Atlantic Highlands, N. J.—Atlantic Highlands is to have a sewerage disposal plant. In fact every municipality along bay shore section will hereafter be required to have disposal plants. At recent special election this borough voted \$25,000 to be used in extending sewer system in town. At last meeting of mayor and council letter was received from State Board of Health stating that that body would approve of proposed new system providing borough officials would guarantee to install disposal plant. It is estimated that such a plant would not cost more than \$6,000 and that this amount can be deducted from \$25,000 appropriation.

Irvington, N. J.—Extension of Ball St. storm drain and construction of East Speedway Ave. storm sewer are being discussed.

Perth Amboy, N. J.—Ordinance has been adopted to lay 8-in. pipe sewer in Cornell St. from Hall Ave. to Brace Ave., and 12-in. sewer in Compton Ave.

Trenton, N. J.—Ordinance has been passed to authorize construction of sewer No. 643, in Emmett Ave., from point near Olden Ave. to Park Ave., there to connect with sewer No. 642. Also ordinance to authorize construction of sewer No. 637 in Home Ave. from point near Elm St., thence southerly in Home Ave. to Lalor St., there to connect with sewer No. 417.

Trenton, N. J.—Ordinance has been passed to authorize construction of sewer No. 642, in Park Ave., Emmett Ave. and Kearney Ave., and to provide for payment of cost thereof.

Vailsburgh, N. J.—Board of Works, Newark, is planning to construct sewerage system in Sanford Ave. and adjacent streets at cost of \$30,000.

Verona, N. J.—Thirty bids for construction of sewer system and disposal plant were received and opened by Verona borough council Oct. 20. All were referred to Sewer Engineer Clyde Potts and Borough Engineer Frank W. Crane for tabulation. Engineer will report at adjourned meeting. The bids on disposal plant ranged from \$36,000 to \$60,000, while bids for four sections of sewer system varied in same proportion. The borough has authorized the spending of \$180,000 for sewer system and disposal plant. Of this amount \$100,000 is to be raised on short term improvement certificates and balance on bonds.

Verona, N. J.—Following are bids received Oct. 20 for sewerage works. The various bidders on section No. 1 with the amount of their bids are as follows: Petro Scola, Glen Ridge, N. J., \$31,232.93; Joseph Cestone, Montclair, N. J., \$32,010.23; Donato Fasco, Montclair, N. J., \$35,771.49; Charles Ippolito, Orange, N. J., \$38,161.04; Sanitary Const. Co., Paterson, N. J., \$42,346.20; Frank Carozza, Baltimore, Md., \$43,380.02; Cestone Const. Co., Montclair, N. J., \$45,437.04; Harrison & Craig, Newark, N. J., \$47,143.90; Dock Contractor Co., Hoboken, N. J., \$51,461.53; Culp Const. Co., Paterson, N. J., \$73,598.29. The various bidders on section No. 2 with the amount of their bids are as follows: Donato Fasco, Montclair, N. J., \$17,801.48; Cestone Const. Co., Montclair, N. J., \$20,133.46; Joseph Cestone, Montclair, N. J., \$21,447.69; Charles Ippolito, Orange, N. J., \$21,957.87; Sanitary Const. Co., Paterson, N. J., \$22,865.35; Frank Carozza, Baltimore, Md., \$24,408.36; Harrison & Craig, Newark, N. J., \$29,312.50; Dock Contractor, Hoboken, N. J., \$30,601.37. The various bidders on section No. 3 with the amount of their bids are as follows: Frank Carozza, Baltimore, Md., \$21,632.99; Charles Ippolito, Orange, N. J., \$21,820.31; Sanitary Const. Co., Paterson, N. J., \$22,521.90; Cestone Const. Co., Montclair, N. J., \$22,721.96; Donato Fasco, Montclair, N. J., \$22,729.91; Joseph Cestone, Montclair, N. J., \$25,555.54; Jos. M. Allen, Newark, N. J., \$27,691.30; Dock Contractor Co., Hoboken, N. J., \$29,365.07; Harrison & Craig, Newark, N. J., \$30,627.05; Culp Const. Co., Paterson, N. J., \$43,116.50. The various bidders on section 4 with the amount of their bid are as follows: Cardell & Romano, Montclair, N. J., \$17,796.18; Joseph Cestone, Montclair, N. J., \$18,780.23; Donato Fasco, Montclair, N. J., \$20,723.75; Charles Ippolito, Orange, N. J., \$21,364.66; Petro Scola, Glen Ridge, N. J., \$22,679.99; Sanitary Const. Co., Paterson, N. J., \$22,869.85; Frank Carozza, Baltimore, Md., \$22,971.46; Cestone Const. Co., Montclair, N. J., \$33,445.99; Jos. M. Allen, Newark, N. J., \$25,015.96; Harrison & Craig, Newark, N. J., \$28,114.30; Dock Contractor Co., Hoboken, N. J., \$31,296.96; Culp Const. Co., Paterson, N. J., \$45,034.23. The various bidders on section No. 5 with the amount of their bids are as follows: P. L. Braunworth, Montclair, N. J., \$37,992; Harrison & Craig, Newark, N. J., \$42,272; Averill-Matthews Co., Newark, N. J., \$42,459; John W. Heller, S. Orange, N. J., \$44,782; Heyman & Goodman Co., Jersey City, N. J., \$46,300; Dock Contractor Co., Hoboken, N. J., \$46,750; Suburban Eng. Co., New York City, \$48,720; Chas. Ippolito, Paterson, N. J., \$50,940; J. E. Bunting Co., Flushing, L. I., \$53,400; Osborn & Marsella Co., Montclair, N. J., \$61,645; Clyde Potts, C. E., 30 Church St., New York City.

Binghamton, N. Y.—Board of contract has directed clerk to advertise for pro-

posals for construction of sewers on Charlotte St. and Phelps Ave., bids to be received on Nov. 3.

Binghamton, N. Y.—Construction of three new sewers has been authorized.

Dunkirk, N. Y.—City engineer has been instructed to submit plans and specifications for the West Side Park sewer system before the State Department of Health at Albany.

Little Falls, N. Y.—Motion was made by Commissioner Stacey that bids be advertised for work of constructing German St. sewer.

Lockport, N. Y.—Construction of two new drains is recommended.

Niles, O.—Resolution has been adopted declaring it necessary to construct sanitary sewers on Vienna Ave., between Davis St. and city limits in sub-district No. 1 of sewer district No. 3.

Niles, O.—Resolution has been introduced to construct sanitary sewer in Depot St. from Erie Railroad to Walnut St. and also in Walnut St. from Clay St. to Grant St. Also resolution to construct sanitary sewer in Vienna Ave. from city limits to Davis St.

Sandusky, O.—Bond issue of \$98,000 will be sold for constructing intercepting sewer No. 2.

Springfield, O.—Bids will be received at office of auditor of city of Springfield, O., until 12 o'clock noon of Monday, Nov. 1, 1915, for purchase of bonds of said city aggregating sum of \$6,271, issued for purpose of constructing storm water sewer in Lowry Ave. from State St. to Clark St., and connecting sewer in Oakwood place from Lowry Ave. to Plum St.

Allentown, Pa.—Details of proposed sewerage system for city are being discussed.

Exeter, Pa.—Permit has been issued for lateral sewer extensions.

Johnstown, Pa.—Department of Health has issued permit for lateral sewer extensions.

Pittston, Pa.—Permit has been issued for lateral sewer extensions.

Punxsutawney, Pa.—Permit has been granted for lateral sewer extensions.

Waco, Tex.—Taxpayers have refused to vote for issuance of bonds to amount of \$75,000 for sewage disposal plant, \$15,000 for sewer extensions and \$10,000 for bridges. The vote against sewage disposal plant bonds was a little more than 2 to 1.

Richmond, Va.—Mayor George Ainslie has signed and returned to City Clerk Ben T. August yesterday resolution appropriating \$37,472.93 for purchase of Southside Co. sewer and water properties.

Parkersburg, W. Va.—City will construct 10 sanitary sewers, 8 to be 8 in. in diam. and 1 9 in. City Council receives bids until Oct. 20. Frank Good is City Clerk. Sewers lately estimated to cost \$7,977.50.

Bellingham, Wash.—City is considering constructing sewer improvements on Ellis St. at cost of \$8,300. Will require 3,540 ft. 10 to 24-in. pipe.

CONTRACTS AWARDED.

Lake Village, Ark.—For sewer system to McCreary Construction Co., at \$18,000.

Visalia, Cal.—To Michael Mussey, 1321 Milvia St., Berkeley, at \$40,500, contract for constructing sanitary sewer extensions. Work includes approximately 22,000 lin. ft. of 6-in. vitrified pipe, 4,385 ft. of 8-in. vitrified pipe, 1,900 lin. ft. of 10-in. vitrified pipe, 14,000 lin. ft. of 30-in. concrete or brick sewers, 16 manholes, 12 flush tanks, castings, etc.

Augusta, Ga.—Health committee of City Council has awarded contract to T. G. Brittingham for construction of pipe sewers on St. Luke St. and Greene St., between Crawford Ave. and Eve St. Mr. Brittingham's bid was \$702.15. Other bidders for contract were as follows: D. A. Bowe, \$947; C. V. McAuliffe, \$1,058, and Callahan & Costello, \$870.50.

Marion, Ill.—For constructing sanitary sewers, to D. E. Nipp, Flora, \$12,953. Other bidders as follows: H. A. Hall, East St. Louis, \$14,379; Hoeftel Bros. Co., Belleville, \$14,580; Meyer & Thomas, East St. Louis, \$15,437.

Princeton, Ind.—For installing sanitary sewer system in southern section to John L. Newman, Evansville, at \$6,126.

Mankato, Minn.—For cement tile ditch No. 39, to G. E. Gilbertson, St. James, at \$15,727.

St. Paul, Minn.—For construction of sewer on Bay St. from Grace St. to Jefferson Ave., to O'Neill & Preston, at \$2,170, and for sewer on Blair St., from

Avon St. to Victoria St., to Christ Johnson, at \$1,202.75. Also following sewer contracts were awarded: On Sargent Ave., to E. T. Webster, at \$1,187.25; on Hamilton Ave., to Doherty & Son, at \$325; on Sargent St., to Doherty & Son, at \$720.

D'Lo, Miss.—To O. C. Eure, Hattiesburg, at about \$12,000, to install sewerage system.

Elizabeth, N. J.—Contract for construction of a drain in Westfield Ave., from Bayway, this city, to Walnut St., Roselle Park, has been awarded to C. H. Winans & Co. at meeting of road committee of Board of Freeholders. The Winans firm's bid of \$2,063.05 was lowest.

Seaside Park, N. J.—For sewer system and disposal plant, to Cantrell Construction Co., Philadelphia, Pa., at \$21,892.

Albany, N. Y.—Contract for laying sewer in Browne St. from McCarty Ave. south 350 ft., has been awarded to Kenny & Dumary, for \$465.40.

Rochester, N. Y.—At meeting of Board of Contract and Supply, held Oct. 20, contracts for improvements were awarded and bids received on other work. Contract for Custer St. sewer was awarded to W. E. Kinney Co. for \$257. Other awards follow: Thomas Creek overflow sewer, Whitmore, Rauber & Vicinus, \$15,805; Clinton Ave. North sewer, Frank Lachiusa, \$8,772; Eradburn St. asphalt pavement, Whitmore, Rauber & Vicinus, \$5,658; Maplewood, Driving Park Aves. and Hastings St. sewer, J. Petrossi, \$2,180.

Utica, N. Y.—At meeting of Board of Contract and Supply, contract for constructing sewer in Baker Ave., between Market and Van Vorst Sts., has been let to A. W. Fitch, the lowest bidder. Bids were: Frank M. Johnston, \$593.50; Domenick Perretano, \$526.20; A. W. Fitch, \$518.25.

Albemarle, N. C.—Following is itemized bid of Acme Plumbing Co., Charlotte, N. C., for constructing sewerage system: 430 lin. ft. 20-in., 90.5 cts.; 2,480 lin. ft. 18-in., 75 cts.; 1,650 lin. ft. 15-in., 60 cts.; 3,075 lin. ft. 12-in., 44 cts. and 47 cts., according to depth; 260 lin. ft. 10-in., 38 cts.; 7,779 lin. ft. 8-in., 29 cts. and 33 cts., according to depth; 2,400 lin. ft. 6-in., 26 cts. and 29 cts., according to depth; 8 M ft. lumber, \$20.70; 6,450 cu. yds. soft rock, 52 cts.; 1,530 cu. yds. hard rock, \$2.75; 17 tons cast iron pipe, \$34.07; 47 manholes, \$30.52; 5 flush tanks, \$56.38; 5 flushing M. H., \$42.55; total, \$20,079. Other bidders: Hewitt Construction Co., Hickory, \$22,283; Dabbs & Myers, Meridian, Miss., \$23,669; Municipal Eng. & Construction Co., Atlanta, Ga., \$25,331. J. D. Spinks is engineer in charge.

Bowling Green, O.—For vitrified pipe (329 ft. 8-in. sewer) to John Cook at \$835.15. Fred Foote is Clerk Service Dept.

Cleveland, O.—For constructing sewers to W. P. Gibbons Contracting Co., 3135 Scranton road, at \$13,456.

East Liverpool, O.—For sewer construction to Hinton & Cunningham, East Liverpool, O.

Allentown, Pa.—Following contracts have been awarded: For construction of storm water sewer and appurtenances on North 6th St., from Chestnut St. northward, to George H. Hardner at his bid of \$257.80.

Aberdeen, S. D.—For sewers in Second St. awarded to A. A. Dobson & Co., Aberdeen.

North Chattanooga, Tenn.—To O'Sullivan, Long & Hagerty, Bessemer, Ala., at \$34,000, for 11 miles of 8 to 12-in. sewers, and to Guild & Co., James Bldg., Chattanooga, at \$5,665, for 700 ft. of 6 to 9-in. brick sewer.

Ogden, Utah.—City Board of Commissioners have awarded contract for building sewer in District No. 128 to the J. P. O'Neill Construction Co., which was lowest bidder. The amount of the contract was \$5,740. The district embraces Quincy Ave., between 27th and 29th Sts.; 28th St., between Quincy and Jackson Aves.; Thompson Ave., between 28th and 29th Sts.; 29th St., between Quincy and Jackson Aves., and on Jackson Ave., between 27th and 29th Sts.

Richmond, Va.—For installing sewer system in Scott's addition to Leroy E. Newton at \$16,876. Will include 1,700 ft. 5-ft. circular brick sewer and require 9,700 cu. yds. earth excavation and 450 ft. 12-in. terra cotta pipe and 3,000 ft. 6-in. terra cotta pipe.

Roslyn, Wash.—To Rutquist & Gustafson, city, at \$2,425, for construction of 8,200 ft. of 6, 8, 10 and 12-in. sewers.

Seattle, Wash.—For overflow sewer in First Ave., N. W., to McDonald & Jones, 410 Globe Bldg., Seattle, at \$15,548.

Appleton, Wis.—For sewers in Richmond St. awarded to J. Dellmann & Co., Appleton, at 77c. per ft.

Superior, Wis.—For constructing sewer work to Patoret Construction Co. at \$6,159; sewer in Patten St., from Sherman to Fifth St., and to M. F. Dollard, Albany, at \$3,630, for sewer in Forbes road.

Mimico, Ont.—For constructing water works and sewer system as follows: Constructing systems and pumping station, to Harvey Stewart & Co., Nova Scotia, \$64,493; disposal plant, F. F. Frye, Toronto, \$15,253; vitr. pipe and segment blocks for system, to Ontario Sewer Pipe Co., Mimico.

WATER SUPPLY

Citronelle, Ala.—Election has resulted in favor of issuing water and sewer bonds in sum of \$25,000.

Florence, Ala.—Special election will be held Nov. 15 to vote on question of issuing water plant bonds in sum of \$21,000.

Santa Cruz, Cal.—Election will shortly be held to vote \$100,750 bonds for water system.

Daytona Beach, Fla.—Town Clerk was ordered to investigate prices of emergency fire pump to be installed at municipal water works to pump 450 gallons a minute in case of a large fire.

Cherokee, Kan.—Bids are being advertised for installation of new pump in one of city's wells and of electric motor with which to operate the pump. New pump will cost about \$750 and motor \$350.

Fall River, Mass.—At regular meeting of Board of Aldermen report of Watuppa Ponds and Quequechan River Commission relative to improvement of stream and conservation of water supply, was ordered resubmitted to commission upon recommendation of special aldermanic committee appointed to consider the report. The Watuppa Water Board is said to be considering matter of petitioning Board of Aldermen for authorization to float loan for \$50,000, balance of \$200,000 originally authorized for construction of intercepting drain.

McBain, Mich.—Village has voted \$9,400 for water works plant.

St. Louis, Mo.—Water Commissioner E. E. Wall has announced that Board of Public Service would introduce at Board of Aldermen meeting bill for appropriation of \$300,000 for water department's funds to build 36-in. main from Bissell's Point to Compton Hill reservoir. Main will be 27,000 ft. long. It will give district service by Compton Hill reservoir higher water pressure, and will increase reservoir's capacity from 60,000,000 to 80,000,000 gallons. Reservoir serves about two-fifths of city, including all district south of Mill Creek Valley and some of downtown section. With this appropriation the water department will have spent \$1,015,000 this year for improvements. To build reservoir roof at Baden and Bissell's Point, \$290,000 has been appropriated, and \$425,000 for enlarging and reinforcing Compton Hill tower.

Atlantic City, N. J.—An ordinance has been adopted providing for laying and construction of high pressure water main under 60-ft. right-of-way along inner line of public park laid out upon beach, or ocean front of Atlantic City, from Maine Ave. to Morris Ave. and beneath such streets as are required, and for such other improvements as may be necessary to furnish high pressure water supply for fire protection of said city.

Perth Amboy, N. J.—Carl C. Christensen having asked board of water commissioners to reject his proposal for the construction of pump foundation and a brick addition to pump house at Runyon, board has authorized City Engineer Samuel J. Mason to readvertise for bids, to be received at next regular meeting, Nov. 3. At regular meeting held Oct. 7, Mr. Christensen was awarded contract for furnishing material and constructing the pump foundation and the 40 by 60 foot addition to pump house. His bid, submitted against five competitors, amounted to \$10,482, and next low estimate, that of Ira R. Crouse, was \$10,985.

Minoa, N. Y.—Proposition to bond village in sum of \$25,000 for purpose of acquiring municipal water system has been voted upon.

Niagara Falls, N. Y.—After a tour of inspection Water Commissioners have decided to lay mains this fall that will

cost about \$3,000. Mains will be laid in these streets: Morley Ave., Carroll St., Vanderbilt Ave., Independence Ave., Washington St. and North Ave. east of Sugar St.

Savona, N. Y.—Construction of a dam and reservoir is being discussed.

Wilmington, N. C.—Special committee has recommended purchase of additional equipment for water works system at cost of \$1,000; also the installation of another filter basin.

Sandusky, O.—Bond issue of \$8,300 will be sold for water works extensions.

Eastside, Ore.—Election will be held in December for voting on \$50,000 bonds for municipal water system.

Halfway, Ore.—Bond issue of \$20,000 for construction of new water system has been approved.

Allentown, Pa.—Water department has been authorized to purchase 225 ft. of 12-in. terra cotta pipe and materials for caulking, cost not to exceed \$90. The piping is to be used as a drain on Lawrence St., near pumping station.

Dalmatia, Pa.—The Dalmatia Water Co. has been granted permit for water works system, including source of supply from springs.

Halifax, Pa.—Water Co. has been granted permit to make repairs and extensions to spring collecting system.

Hanover, Pa.—Permit has been granted Hanover & McSherrystown Water Co. for additions to reservoir.

Johnsonburg, Pa.—The Johnsonburg Water Co. has been granted permit to make repairs to distributing reservoir.

Junata, Pa.—Permit has been issued for intake dam.

Galveston, Tex.—Five bids for laying of new submerged water main across Galveston Bay have been opened. The lowest bid of five bids was more than \$7,000 under second lowest bid. The various bids were as follows: Major & Seagraves, \$13,411; Isaac Heffron, \$23,200; Blodgett Construction Co., \$25,300; Geo. A. Green of Green Bay, Wis., \$28,875; Wm. Moore & Co., \$21,250. Alternate bids submitted were not based on prescribed specifications. The bids were referred to proper officials for tabulation and report.

Roosevelt, Utah.—Contract for new water system to cost \$10,500 will be let in few days.

Olympia, Wash.—Special election will be held to vote on bond issue of \$100,000 for purchase of water supply system.

Seattle, Wash.—Council is considering expenditure of \$75,000 for standpipe in West Seattle.

Seattle, Wash.—An ordinance has been adopted providing for improvement of 13th Ave. Northwest, from West 70th St. to West 75th St., all in the city of Seattle, by constructing therein water mains of proper dimensions and materials, together with fire hydrants and such appurtenances as may be necessary for proper water service and fire protection of said district, all in accordance with Resolution No. 4924.

Tacoma, Wash.—Purchase of two auto trucks and one roadster for water department is being discussed.

Menomonee, Wis.—Citizens will vote on November 1 on \$285,000 bond issue for water works.

Sheboygan, Wis.—Water board has voted improvements to include standpipe, a pumping engine of 12,000,000 gallons capacity, and a 300-H. P. boiler. W. F. Koehn is Superintendent.

CONTRACTS AWARDED.

Normal City, Ind.—To the American Cast Iron Pipe Co. of Columbus, O., contract to supply town with 1,650 ft. of 4-in. and 6-in. water pipe.

Marcus, Ia.—To Des Moines Bridge & Iron Co., at \$4,000, for 75,000-gal. tank on tower; Fairbanks, Morse & Co., at \$3,440, for 60 hp. oil engine, compressor, and centrifugal pump, and to Ward & Weighton at \$2,593, for pump house.

Urbana, Ia.—For installing water works system, to Des Moines Bridge & Iron Co., Des Moines, Ia., at \$5,735. Will include 45,000-gallon tank on 100-foot steel tower; 1,150 feet 8-inch water main; 950 feet 6-inch water main, etc.

Manhattan, Kan.—For constructing relief reservoir, to George Holland, Manhattan, at \$1,983. Other water works improvements to be made with \$69,500 appropriation will be done by force account, and will include extending of mains, new hydrants, etc. Fred Walters is city engineer.

Snearville, Kan.—For water system, to Bickell Co., Kansas City, Mo., at \$20,543.

Shelbyville, Ky.—The New York Continental Jewell Filtration Company, which has contract to install filtration plant for local water company, has let contract for building to Armstrong Construction Company, which is expected to begin work within the next few days. Ralph T. Alger, who will be the resident engineer for filtration company, is here with plans and specifications and has ground staked out for the building. The plant will have a capacity of 750,000 gallons per day, which is more than double the present rate of consumption. The contract between city and water company requires that filtration plant be completed by April 1, 1916. The cost of the plant will be about \$15,000.

Ahmeek, Mich.—To the Keystone Meter Co. contract by Village Council to supply 100 water meters.

Minneapolis, Minn.—To New Jersey Pipe Corporation, 50 Church St., New York, N. Y., for riveted steel pipe.

St. Paul, Minn.—Having disposed of Second Ward sewer project by letting contract for laying of pipes on Third Ave. and Third St. south to O'Neill & Preston, St. Paul contractors, on bid of \$25,400, the South St. Paul City Council has taken up proposition of municipal pumping station, and officials have asserted that definite action probably would be taken before end of month.

Taylor's Falls, Minn.—For furnishing and laying water mains (3,541 ft. 4-in. pipe) two lowest bids were received from Hector Coolsaet, \$3,293.20, and Wm. C. Fraser at \$3,403.34.

Jamestown, N. Y.—To Artesian Well & Supply Co., Providence, R. I., for 10-inch driven wells, at \$10,175.

Westbury, N. Y.—To Wm. G. Fritz Co., for constructing water system in Carle Place, at \$25,554.

Mt. Olive, N. C.—To the Morehead City Plumbing Co., by Board of Aldermen, for installation of about 2 miles of water main, for about \$10,000.

Cincinnati, O.—For furnishing pipe castings, to U. S. Cast Iron Pipe & Foundry Co., Addiston, O., at \$34,807.

Middletown, O.—To J. A. Yingling's Sons, Hamilton, for driving wells at \$3,500. S. G. Pollard is Engineer, 3422 Burch Ave., Cincinnati.

Wilberforce, O.—For improving water system as follows: 80,000-gal. steel tank and tower to Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa., at \$5,536; two steam pumps to Wineman Pump Mfg. Co., Columbus; hot water storage heater and softening plant to Shurtle Machine Co., Columbus; well and connections to S. H. Bond. Estimated cost \$3,472.

Klamath Falls, Ore.—W. H. Macon has been awarded contract for construction of 4-ft. dyke on B. E. Kerns ranch, near Keno, 15 miles south of this city. Work has already begun. The dyke will keep waters of Klamath River and marsh region nearby off of ranch land, after which system of drainage will be inaugurated. By this method 6,500 acres of land now useless will be reclaimed to cultivation.

West Lynn, Ore.—To J. W. Moffatt, West Lynn, for constructing municipal water system, at \$15,000.

Contesville, Pa.—To Partridge & Burke of Hohokus, N. J., Contract B construction of high service system for \$23,334.

Columbia, Tenn.—The Columbia Water & Light Co. on Oct. 15 has closed contract with International Filter Co. of Chicago, for complete installation of filtration system which company is obligated to install under its contract dated Aug. 7, with city of Columbia. Under this contract system in all probability will be in working order on or before Jan. 1, 1916.

Olympia, Wash.—The General Machinery Co., of Spokane, has been awarded contract for furnishing simplex single water pump at Eastern Hospital for Insane. The contract price was \$3,124. Pump will be used to supply water both at hospital and at institute for feeble-minded nearby.

Puyallup, Wash.—At special meeting of Council, bids for 6,000 ft. of iron water pipe were opened. Two bids were received, Walsh & Gardner and Crane & Co., both of Tacoma. The former received the contract for iron pipe and latter had low bid on lead, which will be used for solder. City Engineer George D. Ball said pipe would cost about \$1,250.

Kenosha, Wis.—To Greling Bros., Green Bay, at \$78,875, for lake intake and crib on Washington Island.

LIGHTING AND POWER

Phoenix, Ariz.—City manager has asked for bids for not less than 25 or more than 300 ornamental electric lamp standards, in accordance with plans prepared by city engineer.

La Manda Park, Cal.—Preparations are being made for installation of ornamental lighting system for which contracts will be awarded about Dec. 1. Plans call for installation of about 300 ornamental standards mounted with 100-cp. lamps maintained by underground wires.

Ontario, Cal.—Council has adopted plans and specifications for ornamental lighting system on West A St., between Laurel and Palm Aves.

San Jose, Cal.—Better lighting of No. First St. has been planned. Committee had been appointed and secretary instructed to communicate with various syndicates manufacturing electrolights with view to having definite specifications and figures ready for next meeting on Oct. 20th.

Washington, D. C.—The Bureau has been informed by business man in this country that correspondent in Greece desires quotation on insulated switchboard cable for telephone apparatus and single insulated wire, specifications of which may be examined upon application to the Bureau's informant. No. 18,807, Bureau of Manufactures.

Mishawaka, Ind.—Petition has been read at meeting of Board of Public Works from residents of Edgewater drive asking that modern ornamental system of post lighting be installed from Cedar St. to end of the drive.

Richmond, Ind.—Bids for installing ornamental lighting system on North Ninth St., between Main and North A Sts., were received by Board of Public Works Oct. 18th. While there were several bidders, only two of them, both Richmond concerns, complied with terms of advertisement by bidding on installing system as well as furnishing standards and lamps. These two concerns were Richmond Electric Co. and Craighead Plumbing & Electric Co. Contract will probably be awarded to the Richmond Electric Co. It was low on bids for both magnetite and nitrogen lamps. Bids of two local companies were: Richmond Electric: Cutter ornamental standards (13), and magnetite lamps, \$1,758; 1,000 candlepower nitrogen lamps and Cutter standards, General Electric tops, \$1,442.50; 1,000 candle power nitrogen lamps, Cutter standards and tops, \$1,434.13. Craighead Co., 13 standards and magnetite lamps, \$2,296; 13 standards and nitrogen lamps, \$1,896.

Cedar Falls, Iowa.—Plans are being considered for extension of ornamental lighting system on Main St.

Muscattine, Ia.—Installation of uniform boulevard lighting system is being considered by committee.

Belleville, Kan.—Installation of ornamental lighting system around Court House Square and in various other streets is being considered.

Goff, Kan.—City council has passed ordinance authorizing issuance of electric light bonds in sum of \$6,000.

Havensville, Kan.—Election has resulted in favor of issuing electric light bonds in sum of \$8,000.

Biddeford, Me.—City is considering cluster light system.

Upton, Mass.—Residents on Pearl, Mechanic and other outlying streets of the town are now anxiously awaiting report of board of selectmen at special town meeting next month when it will be decided if these streets are to be further lighted. It was the residents of these streets that signed petition last spring asking for additional 30 lights to be added to street lighting system. The location of new lights was to be left with selectmen.

Ellet, Mich.—Petitions for electric lights at Buckham and Kearsley, Franklin and Dort, and Marvin and Gillespie streets have been referred to lighting committee.

Muskegon, Mich.—Funds are being raised for installation of ornamental lamps on Terrace St. Plans call for the erection of from 45 to 50 standards, to cost about \$2,000.

Du'nt's, Minn.—Additional street lights have been ordered by City Commissioners.

Hoboken, N. J.—City Commissioners have approved specifications for new street lighting system and city clerk will advertise for bids. Specifications call for installation of ornamental lamps, maintained by underground wires, in the business district; also for lighting

streets, parks and other public places, lamps of 400 c. p. and 600 c. p. to be used.

Albany, N. Y.—Secretary Wachsmann has been directed to advertise proposals for furnishing lamp posts for plaza.

Warren, N. Y.—Plans are being considered for installation of an ornamental lighting system on Pennsylvania Ave.

Cygnat, O.—Election has resulted by vote of 135 to 20 in favor of issuing 5 per cent light bonds in sum of \$8,000. W. M. Velia is village clerk.

Green Camp, O.—Bids will be received at office of village clerk for purchase of \$5,000 bonds issued for purpose of providing funds for furnishing of electricity for lighting of village. H. R. Watts is clerk.

Hamilton, O.—Cluster lights on Main St., from bridge to D St., have been promised to committee of West Side Commercial Association by city service director.

Massillon, O.—Resolution asking city council to take steps to have lighted new viaduct west from South Erie St. to new mills now in operation on Columbia Heights, has been passed by Massillon Chamber of Commerce.

Toledo, O.—Installation of "white way" on Main St. and Front St. is being considered.

Columbia, Pa.—Borough Council will use ornamental lamps standards for street lighting, of which 53 will be erected on principal business streets.

South Bethlehem, Pa.—Ordinance providing for ten-year contract (dated Oct. 1, 1915-Oct. 1, 1925), with Halcyon Electric Light & Power Co., has been read for third time. Several amendments were offered and ordinance with amendments was ordered submitted to borough solicitor for an opinion.

Milwaukee, Wis.—Resolution providing for expenditure of \$34,000 for purchase of equipment for street lighting system of the West Side has been adopted.

CONTRACTS AWARDED.

Milton, Del.—By Town Council contract for construction of municipal electric light plant to W. W. Conwell at \$8,600.

Huntington, Ind.—For installing ornamental street lighting system to the Central Electric Co., South Bend, at \$17,000. Plans call for 391 nitrogen-filled lamps in the business district, maintained by underground wires.

Richmond, Ind.—Board of Public Works has awarded a contract for first ornamental street lighting system with most modern development of the electrical wizard's discovery—the mazda-nitrogen lamps. The ornamental lighting system, to be installed in first block of North Ninth St., will consist of 13 standards, each surmounted by 1,000 candlepower nitrogen lamps. The system will be ready for use by Thanksgiving. Contract was awarded to the Richmond Electric Co. The cost will be \$1,531.80, to be paid for by property owners. The city furnishes the electricity without cost and maintains the lamps.

Lawrence, Kan.—City commissioners in special session has awarded to B. R. Electric Co. of Kansas City contract for supplying material for new white way of Lawrence. The B. R. Co. was lowest bidder on material among all dealers who submitted estimates. The company's bid was \$2,717.17 and this is figure at which contract was let.

Mandeville, La.—To St. Tammany-New Orleans Railway Co., contract by Town Council for lighting of town streets for period of five years.

Lake Placid, N. Y.—Contract by terms of which Paul Smith's Electric Light & Power & Railroad Co. will furnish electric current for lighting village of Lake Placid during next five years, was signed by village trustees of this place and Mr. Phelps Smith, of the company, at special meeting of trustees. Village is to use its own pole lines to distribute electricity, to meter current, build transformer station and erect power line to boundary between District No. 1 and District No. 2 in town of North Elba.

Potsdam, N. Y.—The Northern Power Co., which controls large number of electric transmission lines from Hannawa, Hiesley Falls and Massena has closed contract with Gregory Electric Co. to furnish power for lighting Morris-town. A line will be built from Heuvelton to that place and will also be extended to Hammond and Brier Hill. It

will get its current from Potsdam-Ogdensburg power line which has branch running to Heuvelton.

Yonkers, N. Y.—At meeting of board of contract and supply, David E. Allen of the city was awarded contract for supplying city two hundred and thirty-seven ornamental lighting standards. His bid for it was \$6,991.50. There were only two other bidders. They were the J. E. Mott Iron Works with \$7,254.57 and the Central Foundry Co., with \$8,259.45.

Milwaukee, Wis.—By bidding \$3,810 lower than Milwaukee firm, the Longstadt-Meyer Construction & Supply Co. of Appleton, Wis., won contract to install lighting material in city's demonstration street electric lighting circuit on west side. Contract price is \$12,490. The Alex M. Karling Co. of Milwaukee submitted bid to commissioner of public works in sum of \$16,300.

Niagara Falls, Ont., Can.—City Council at meeting Oct. 18 accepted bid of Northern Electric Co. on supplies for new incandescent lighting system at the north end, at \$1,596.73. Three other bids were received, one from Canadian Westinghouse Co., at \$2,514.90; one from the General Electric Co., at \$1,965.37, and other from A. H. Winter-Joyner Co., at \$1,747.35. Work of replacing all arc lights north of Simcoe St. with incandescent lamps will be started within two weeks. Change will cost about \$4,000. Old arc lamps will be placed in various side streets throughout city that are now poorly illuminated.

FIRE EQUIPMENT

Auburn, Cal.—Special election has been called November 16th for \$22,000, of which \$5,000 is for purchase of fire trucks and \$2,000 for installation of fire alarm system.

Gilroy, Cal.—Plans for installation of fire alarm system and specifications for same have been presented, and E. F. Rogers, City Clerk, will at once advertise for bids.

Paso Robles, Cal.—Purchase of motor combination chemical and hose car is being discussed.

Bridgeport, Conn.—Owing to growth of city new fire alarm system is said to be required.

New Haven, Conn.—Appropriation of \$27,000 has been made for purchase of new apparatus for local department.

Shelton, Conn.—The Echo Hose Co. will petition Borough to purchase auto chemical.

Delaware City, Del.—Arrangements are being made to purchase chemical engine for local company.

Washington, D. C.—The Bureau is informed by American consular office in Chile that representative of fire company in his district desires to receive illustrated catalogues, prices, etc., of motor hose trucks, the reel of which is operated by power other than hand. Correspondence in Spanish is preferred, but English may be used. No. 18,832, Bureau of Manufactures.

Eustis, Fla.—Town Council has decided at its regular meeting to advertise for bids for a gasoline propelled and operated fire engine.

Miami, Fla.—Council is considering petition for extension of fire alarm system. Local fire chief will purchase 20,000 ft. of copper wire for the purpose.

Springfield, Ill.—Fire Committee of Underwriters have recommended expending \$200,000 for fire apparatus and water works improvements.

Sterling, Ill.—City is considering purchase of chemical auto truck for fire department.

Hillsdale, Ind.—Voters will decide in November on appropriation of \$5,000 for motor apparatus.

Louisville, Ky.—Practically all of the recommendations contained in report of National Board of Fire Underwriters have been adopted by Fire Chief Timothy Lehan and passed up to Board of Public Safety in Chief's annual report. These recommendations include motorization of department, adding of one man to each seven-man company and establishment of drill tower and school for new recruits. Chief Lehan does not estimate cost of these improvements in his recommendations, but it has been previously stated that they would be \$300,000 and increased cost of maintenance of about \$30,000 or \$40,000.

Fall River, Mass.—There were 16 bids for motorizing local fire department opened at office of City Auditor Oct. 18 in presence of Fire Commissioner Davis and 15 representatives of bidding firms. Some of bids covered entire contract and others were divided. There is sum of \$90,000 at disposal of Fire Commissioners for this big proposition of motorizing department, but it will probably be some time before decision is arrived at, owing to large number of bids and complicated form in which they were presented.

Merrimac, Mass.—Town meeting will be held Oct. 26 to see what action town will take in matter of installing automatic compressed air fire alarm system.

Pontiac, Mich.—Council is considering question of purchase of motor combination chemical and hose wagon.

Virginia, Minn.—City Council is planning to purchase fire truck and 1,000 ft. of fire hose.

Long Branch, N. J.—On Nov. 2nd question of purchasing motor fire apparatus to cost \$21,000 will be voted on. T. A. Arrowsmith is Commissioner of Public Safety.

Pemberton, N. J.—Money is being raised for purchase of motor chemical engine.

Albany, N. Y.—Ordinance has been passed authorizing bond issue of \$8,000 for tractor for fire truck No. 2 and for chassis for gasoline engine of Station 9.

Troy, N. Y.—Question is being discussed to provide for motor combination chemical and hose wagon appropriation in next tax budget for Protection Hose Company.

Barberton, O.—Safety Director W. E. Witner has recommended purchase of additional piece of motor apparatus.

Springfield, O.—City manager has been instructed to advertise for bids for one additional hose and chemical wagon and also for purchase of second-hand hose and chemical wagon, latter having reference to one which belongs to Kelly-Springfield Co., but has been used by city without charge for over a year.

Wooster, O.—Bond issue of \$6,000 has been authorized for purchase of two pieces of motor apparatus.

Chester, Pa.—Application has been made to Council by Franklin Fire Co. asking that they be granted permission to motorize another apparatus.

Yardley, Pa.—Fire company will purchase new piece of motor apparatus. Women of Yardley contributed \$1,500 towards same.

Petersburg, Va.—About \$50,000 will be spent to improve fire and police departments.

CONTRACTS AWARDED.

Terre Haute, Ind.—Board of Safety has awarded contract for four motor-driven combination chemical wagons and hose carts, and motor-driven 75-ft. aerial truck to the Robinson Fire Apparatus Mfg. Co., of St. Louis, for \$24,700.

Frederick, Md.—Contract for 1,200 ft. of fire hose has been awarded to Fabric Fire Hose Co., New York, through its Baltimore office.

St. Joseph, Mo.—By City Purchasing Agent, to B. F. Goodrich Rubber Co., of Akron, O., 1,000 ft. of White King hose, at 80c. per ft., and 1,200 ft. of Chieftain hose, at 70c. per ft. From the Gutta Percha Rubber Co., of Chicago, 1,200 ft. of Ridgewood brand hose, at 70c. per ft.

Elizabeth, N. J.—City Council has decided to buy two much-needed fire department automobiles, for chief and deputy chief, and contract for them was awarded to Diamond Apperson Motor Car Co.

Carthage, N. Y.—Board has closed transaction with American-La France Engine Co. of Elmira by purchasing Brockway truck, consideration \$2,000 on a 30-day trial.

Lima, O.—It will be necessary to accept bid of Gramm-Bernstein Co., Lima, if city is to be equipped at this time with motorized fire apparatus, according to safety committee of council, and council itself. The Lima concern bid \$14,475 on five pieces of apparatus specified by Safety Director Goodyear. This was only offer within provision of \$15,000 made by city council. Bid of the Seagraves Co., Columbus, on five pieces was more than \$30,000, and that of the American-La France Fire Engine Co., Elmira, N. Y., was nearly \$25,000. Apparatus for which council planned was triple combination machine, that is, one with hose, chemical and pumping equipment—for North fire station, a similar machine of

somewhat larger capacity for South station, and for Central station a motorized hose wagon and tractors for steam fire engine and aerial truck. Contract will be awarded in a few days.

Springfield, O.—Purchase of five new pieces of motor driven fire apparatus and advertisement for bids for additional hose and chemical wagon and sale of three machines of old type to be displaced, was authorized by city commission Oct. 18 in final program unanimously agreed to for complete motorization of Springfield fire department. New equipment as ordered in action will include one Kelly-Springfield combination hose and chemical wagon at \$2,900, one 75-ft. Leagrave aerial ladder at \$9,600, one Ahrens-Fox auto pump and hose carrier at \$7,425, two American-La France, 75-horse power combination hose and chemical wagons at \$5,000 each.

Seattle, Wash.—For seven pieces of fire apparatus, to Seagrave Co., Columbus, O., at \$36,218.

BRIDGES

Florence, Ariz.—County Commissioners and E. R. Stafford, county engineer, are planning to construct 2 concrete bridges near Winkelman, to cost about \$30,000 each.

Jacksonville, Fla.—City council will be asked by committee on public works to appropriate funds for new concrete bridges in this year's budget.

Atlanta, Ga.—City is contemplating construction of underpass on Bond Ave., to cost about \$60,000.

Richmond, Ind.—County Bridge Engineer Mueller will be asked by county commissioners to submit at least three different plans for new bridge over Whitewater before commissioners take action on new bridge.

Pittsfield, Mass.—Finance committee of city government has decided to recommend loan for \$1,200 to pay city's share of cost of rebuilding Lebanon Ave. bridge.

Bayonne, N. J.—At its meeting Oct. 14 the Hudson County Board of Freeholders went on record in favor of bridge across Newark Bay from Bayonne to Elizabeth that would carry vehicular traffic as well as Central Railroad Co. of New Jersey trains, and adopted resolution calling upon United States War Department to withhold its permission for construction of any new bridge until Bayonne citizens are given a hearing.

Boonton, N. J.—Common Council has approved agreement reached by Mayor and Clerk and Lackawanna Railroad by which road will replace wooden bridge which carries Sanny road over the Lackawanna tracks with a concrete bridge. New structure will be four and one-half feet higher than present one and will have over-all width of 25 ft., five of which will be taken up with a sidewalk on one side of the bridge.

Morristown, N. J.—At meeting Oct. 13 of Board of Chosen Freeholders, contract for erection of concrete bridge with steel beams on the road leading from Morristown to Mount Tabor was awarded to Thomas Lash for \$1,345.

Plainfield, N. J.—Construction of various bridges has been ordered to cost about \$9,500.

Passaic, N. J.—The Passaic County Board of Freeholders have awarded contract for reconstruction of Hope Ave. bridge over Weasel Brook, this city. The lowest bidders were John Wehrle, Jr., whose figure of \$4,098 was accepted, and the De Vogel Construction Co., which bid \$4,099.

Trenton, N. J.—Bridge committee of board of freeholders, on motion of Mr. McCullough, has directed County Solicitor Kulb to take immediate steps towards having public utilities commission take up question of compelling the Delaware & Raritan Canal Co. replace its bridge at Baker's Basin.

Wildwood, N. J.—Plans are under way for linking up of all South Jersey shore resorts by bridge and boulevard system extending from Cape May to Atlantic City.

Lowellville, O.—Bids will be received noon, Nov. 15, for purchase of \$5,000 bonds for construction of bridge across the Mahoning River. Clifford Baker is Clerk.

Oswego, N. Y.—Arrangements are being made by officials of state engineer's office at Albany to award contract for building state's portion of new bridge over Oswego River at Minetto. Bids on the work will be received soon. By special act of legislature last spring sum

of \$50,000 was appropriated for building state's portion.

Youngstown, O.—City Engineer F. M. Lillie has received detailed estimates and more complete plans for proposed East Federal St. bridge which were prepared by Lake Shore Railroad engineering force. Estimates show that total cost of improvement will be \$670,000, but this sum includes cost of moving tracks and Lake Shore freight depot.

Butler, Pa.—State highway department is planning construction of 36 ft. wide viaduct, to replace abandoned Plank road bridge.

Johnstown, Pa.—Council has finally approved plans prepared by Engineer G. A. Flink, of Harrisburg, for Horner St. bridge. Bids will be advertised to-morrow. They will be received up to Nov. 6. As has been announced bridge is to be a two-span one, of concrete. Final plans submitted by Engineer Flink show a bridge of handsome design. Some changes were made at suggestion of council particularly ones which will enable operation of trolley cars across it. One track is provided.

New Castle, Pa.—Construction of the Gardner Ave. viaduct is being urged.

Knoxville, Tenn.—Twelve bids for new bridges over county were opened at a special meeting of Knox County Good Roads Commission. All these bridges are to be made of concrete and they range from 45 to 60 ft. in length. Total cost of these bridges will be about \$30,000. Bids have been referred to engineer for tabulation, and it is expected that contracts will be awarded at next regular meeting of commission.

Knoxville, Tenn.—Construction of viaduct on Gay St. over Southern Railway tracks is being considered.

Fort Worth, Tex.—County Commissioners have approved plans of county engineer for steel and concrete bridge over Deer Creek, on road connecting Burleson and Cleburne cardinal roads, and authorized county auditor to advertise for bids for its construction.

Galveston, Tex.—The engineers representing several interests involved in reconstruction of damaged causeway have reached a definite conclusion regarding plans for rebuilding the structure.

Marshall, Tex.—At very large attended mass meeting resolution was enthusiastically and unanimously passed to petition city commission to call election to vote on bond issue to erect a viaduct across Texas & Pacific shops and yards. Petition was numerously signed and the election will be called for Nov. 23.

CONTRACTS AWARDED.

Florence, Ariz.—To Topeka Bridge & Iron Co., Topeka, Kan., at \$46,595, contract for construction of two concrete bridges over Gila River near Winkelman by County Commissioners. E. S. Stafford, city, is County Engineer.

Carmi, Ill.—To J. J. O'Heron & Co., of Chicago, contract at \$21,960, for erection of Main St. bridge in Carmi township, White County, to be 3-span of arch type, arches above roadway.

Bedford, Ind.—To Ewing Shields, of Greencastle, for construction of 116-ft. span concrete arch over Salt Creek, at \$13,768. Ezra W. Edwards is County Auditor.

Crown Point, Ind.—For pony truss bridge over Hart Ditch, Brown St., Munster, to Barnes & Shearer, Hobart, at \$4,696.

Indianapolis, Ind.—Contract for construction of bridge over Fall Creek at Meridian St. has been awarded to Dunn-McCarthy Construction Co. of Chicago. Bid was \$146,378. Bridge is to be completed in one year, and will be constructed of reinforced concrete, faced with Bedford stone and granite.

Salem, Ind.—For five concrete bridges to Montgomery-Parker Co., Hatfield, at \$7,000.

Humboldt, Ia.—To Humboldt Cement Products Mfg. Co., city, for groups A, C, D and E of county bridges and the Koss Construction Co., Des Moines, awarded group B, by the County Commissioners. Total of contracts amounts to \$33,000.

Lawrence, Kan.—Contract for construction of new \$200,000 concrete bridge across Kaw river at Lawrence, in accordance with instructions of voters of Douglas county who voted special bridge fund for that purpose, has been let by board of county commissioners to Missouri Valley Bridge Co.

Salina, Kan.—Otto Peterson has secured contract for new, small concrete bridge west of Bavaria, granted by County Commissioners. The bridge is small, costing but \$335.

Lancaster, Ky.—The Garrard County Fiscal Court has closed contract with Urbana Bridge Co. for new steel bridge to cross White Lick Creek, in Upper Garrard. The bridge is to be built at once under State supervision at cost of \$2,800.

Brownsville, Me.—For concrete bridge across Pleasant River to Sanders Engineering Co., Portland, at \$11,000.

Meridian, Miss.—City Council has awarded contracts for concrete bridges as follows: To A. P. Pool & Son, five bridges, one at Pacific St. and 46th Ave., for \$1,194; on 16th St., between Ninth and Tenth Aves., \$340; Fifth St. and 24th Ave., \$444.90; 25th Ave. between Fourth and Fifth Sts., \$442.40; 26th Ave. between Third and Fourth Sts., \$393.20; to Concrete Steel & Construction Co., bridge at Hooper St. and 45th Ave., \$1,450; Fifth St. and 44th Ave., \$2,250.

Billings, Mont.—The Security Bridge Co. has secured contract for putting in seven bridges in Fallon county. Contract price was \$15,000.

Elizabeth, N. J.—Two contracts were awarded Oct. 19 at meeting of Road Committee of Board of Freeholders. One for repairs to bridge on Springfield Ave., near Taylor's Hotel, New Providence township, was given to Joseph S. Del-duca, whose bid of \$698 was lowest. The other, for construction of culvert in Brightwood Ave., near Clark Ave., Westfield, went to Louis DiFrancesco, whose bid of \$415.50 was lowest.

New Brunswick, N. J.—Only one bid has been received for construction of concrete and steel bridge over Woodbine Ave., in Woodbridge township, from Joseph McEwen, Jr., of Woodbridge, with a bid of \$745, and contract was later awarded to him.

Binghamton, N. Y.—Contract for construction of Hinman's Corners bridge in town of Chenango to replace structure washed out by July flood was let to Grotton Bridge Co. at meeting of Chenango town board in Supervisors' chambers at Court House. Company's bid was \$1,450, exclusive of concrete abutments, which are being constructed by town.

Portland, Ore.—Contract for building overhead crossing on Capital Highway at Bertha has been let by County Commissioners to the Heincke Bros. Co. The bridge will be built for \$7,611.35.

Belton, Tex.—County Commissioners' Court have let contracts for two bridges to be erected on the Temple-Holland and Bartlett-Donahoe roads to Austin Bros., of Dallas.

Brandywine, W. Va.—By Pendleton County Commissioners, Franklin, W. Va., contract to Farris Bridge Co. of Charleston, at \$5,600, to construct concrete bridge at Brandywine; length 140 ft.; 3 spans.

Hooper, Wash.—For constructing substructure of bridge over Palouse River, near Hooper, to Grant Smith Co., of Seattle. Bridge is to be a deck plate girder.

MISCELLANEOUS

San Jose, Cal.—Plans and specifications for reinforced concrete curtain wall on Campbell Creek in county of Santa Clara, Cal., are now presented by county surveyor, and on motion adopted, and clerk directed to advertise for bids for same, bids to be opened on Nov. 1, 1915, at 10 o'clock a. m.

Jacksonville, Fla.—Bids will be received until noon, Nov. 8, 1915, by Port Commission of Jacksonville for sprinkler system to be installed in Cotton Compress and storage building now in course of construction at Jacksonville. The system must comply with Underwriters' requirements in every particular and bidders will be required to submit plans and specifications for completed installation. F. W. Bruce is chief engineer.

Athens, Ga.—Purchase of incinerator has been authorized, also purchase of regulation patron wagon.

Waukegan, Ill.—There seems no doubt but that proposition of securing incinerator plant under provisions of new law passed at the last session of state legislature will come up for discussion and

possibly passage at regular meeting of City Council.

Bloomington, Ind.—At called meeting of City Council, issue of \$10,000 city hall improvement bonds were ordered to finish paying for new \$50,000 city building at Walnut and Fourth Sts., which is almost ready for dedication. Hall is built of Monroe County stone.

Fort Wayne, Ind.—Board of works has retained Samuel A. Greenley, Milwaukee, Wis., to prepare plans for installation of garbage incinerator.

Indianapolis, Ind.—Bids for increasing levee along Fall Creek from Indiana Ave. to 16th St. have been opened by Board of Public Works and taken under advisement. Bids were as follows: Mansfield Engineering Co., 24½ cts. a cu. yd. of fill; American Construction Co., 37 cts. a cu. yd. of fill, and the Fisher-Dugan Co., \$2,499.40 for the job complete. The city engineering department estimated there will be about 10,000 cu. yds. of fill.

Mason City, Ia.—Plans are being prepared by E. J. Gones, Macon, Ga., for disposal plant to cost about \$8,000.

Hutchinson, Kan.—Voting of terminal aid bonds to amount of \$110,000 in Larned and Pawnee county townships by huge majority insures construction of Anthony and Northern railroad into Larned, from its present terminal at Trousdale, Edwards county.

Salina, Kan.—Salina will have \$26,000 and perchance premium coming in soon. Council has instructed clerk to call bids on bond issue, proceeding that might have been under way weeks ago. Bids will be opened Nov. 1.

BIDS RECEIVED.

Albany, N. Y.—Following are three lowest proposals received by state highway commission at its office No. 55 Lancaster Street, Albany, N. Y., for construction of the following highways by state aid on Tuesday, October 26, 1915: Road No. 1279, Dunnsville-Altamont, Albany Co., 3.41 miles—George J. Curran, Middletown, Conn., \$27,855.40; Huntcoo & Ferguson, Hudson Falls, N. Y., \$29,719; A. N. Hoyt, Albany, N. Y., \$30,000. Road No. 5532, Arkport-Van Scooters Corners, Allegheny and Steuben Cos., 5.25 miles—Kenedy Construction Co., Albany, N. Y., \$50,881.70; J. G. Hayes Co. Inc., Rome, N. Y., \$51,976.11; Greenfield Cons. Co., Hornell, N. Y., \$52,064.64. Road No. 1327, Fleming-Scipio, Part 2, Cayuga Co., 6.06 miles—John H. Gordon, Albany, N. Y., \$52,010.90; Michael H. Ripton, Rochester, N. Y., \$52,110.25; John G. Hayes & Co. Inc., Rome, N. Y., \$53,054.01. Road No. 5594, Plattsburg-Ingraham, Clinton Co., 3.79 miles—Bluff Point Stone Co. Inc., Plattsburg, N. Y., \$29,160; Boynton & McNally, Keeseville, N. Y., \$30,979.50; Routley & Summers, Huntington, Quebec, Can., \$30,755. Road No. 1331, Claverack-Chat-ham, Part 1, Columbia Co., 4.27 miles—Russo-Parker Cons. Co., Hudson, N. Y., \$39,756.90; Marks Kearney, Hudson, N. Y., \$39,757; Rumph & Stevens, Lake Placid, N. Y., \$42,290.80. Road No. 1332, Claverack-Chatam, Part 2, Columbia Co., 7.77 miles—Marks Kearney, Hudson, N. Y., \$62,186; Russo-Parker Cons. Co., Hudson, N. Y., \$63,957.90; Gruner & Hollenbeck, Harriman, N. Y., \$65,659.90. Road No. 5595, Broome County Line-Marathon Vill., Cortland Co., 3.35 miles—T. H. Gill Co., Binghamton, N. Y., \$39,759.20; Dana W. Robbins Co. Inc., New York City, \$40,359.70; James Rossney, Buffalo, N. Y., \$41,415.93. Road No. 1333, Collins Center-Springville, Erie Co., 9.14 miles—Shanley Cons. Co., Buffalo, N. Y., \$141,828; Atlanta Cons. Co., Atlanta, N. Y., \$141,894; F. H. Wells, Corfu, N. Y., \$142,263. Road No. 1334, Transit, Part 1, Erie Co., 4.30 miles—Langen Cons. Co., Albany, N. Y., \$70,049; Henry P. Burgard Co., Buffalo, N. Y., \$74,886; Harry W. Roberts Co., Utica, N. Y., \$73,991. Road No. 1335, East Eden-Hamburg, Erie Co., 4.50 miles—Stanley Cons. Co., Buffalo, N. Y., \$57,914; Bison City Eng. & Cons. Co. Inc., Buffalo, N. Y., \$58,083.60; F. H. Wells, Corfu, N. Y., \$58,095. Road No. 1336, West River Road, Erie Co., 5.19 miles—George Neillons, Grand Island, N. Y., \$56,250.50; John W. Landel, Tonawanda, N. Y., \$59,211.50; F. J. Mumm Contg. Co., Buffalo, N. Y., \$64,239. Road No. 5582, Leroy-Pavilion, Part 2, Genesee Co., 4.53 miles—Chilson & Gibson, Leroy, N. Y., \$44,893; Greenfield Cons. Co., Hornell, N. Y., \$46,094; Hovey E. Benedict, Williamsport, Pa., \$48,063.25. Road No. 5593, Caledonia-Mt. Morris, Part 1, Livingston Co., 7.69 miles—James Anderson, Albany, N. Y., \$63,

663; Hendrickson-McCabe Cons. Co., Spencerport, N. Y., \$63,554.50; Ribstine-Holter Co., Rochester, N. Y., \$65,070.50. Road No. 1110, Oneida-South Bay, Part 1, Madison Co., 3.05 miles—Mohawk Engineering Co., Mohawk, N. Y., \$26,151; Fort Schuyler Cons. Co., Oneida, N. Y., \$26,590.50; Michael O'Brien, Cortland, N. Y., \$27,039. Road No. 1326, DeRuyter Village-Albany Street, Madison Co., 0.18 mile—Charles E. Nash and Frank G. Griffin, Norwich, N. Y., \$2,282.80; Crowe & Walsh, Pittsfield, Mass., \$2,322.50; Wm. F. Hinds, DeRuyter, N. Y., \$2,397.50. Road No. 1328, Winton Road-North, Monroe Co., 0.73 mile—Whitmore-Rauber & Vicinius, Rochester, N. Y., \$12,927.25; Ribstine-Holter Co. Inc., Rochester, N. Y., \$13,113.75; Julius Friedrich & Co. Inc., Rochester, N. Y., \$13,218.50; Langan Cons. Co. Cor., Albany, N. Y., \$13,876.50; Union Paving Co., Schenectady, N. Y., \$14,630.25. Road No. 1327, East Rochester-Pennfield, Monroe Co., 2.91 miles—Ribstine-Holter Co. Inc., Rochester, N. Y., \$35,548; Langan Cons. Co., Albany, N. Y., \$37,369; Whitmore-Rauber & Vicinius, Rochester, N. Y., \$38,465; Union Paving Company, Schenectady, N. Y., \$39,121; Dodge Cons. Co. Inc., Rochester, N. Y., \$39,616; Chambers & Barnes, Rochester, N. Y., \$42,366. Road No. 5547, Whitesboro-Carey Corners, Oneida Co., 0.70 mile—Langan Cons. Co., Albany, N. Y., \$17,187.20; Harry W. Roberts Co., Utica, N. Y., \$18,795.25; H. B. Sproul Cons. Co. Inc., Peekskill, N. Y., \$19,291.25; Union Paving Co., Schenectady, N. Y., \$20,345. Road No. 5244-A, Phoenix-Syracuse, Onondaga Co., 0.18 mile—M. J. Gleason & Co., Syracuse, N. Y., \$2,175; Mondo Cons. Co. Inc., Syracuse, N. Y., \$2,267; Anthony Sporato, Syracuse, N. Y., \$2,158.50; Pathfinder Cons. Co. Inc., Fulton, N. Y., \$2,490. Road No. 488, Port Jervis-Sullivan Co. Line, Part 2, Orange Co., 3.64 miles—Armstrong & Trowbridge, Middletown, N. Y., \$29,868; John Arborio, New Haven, Conn., \$30,911; Jackson Brothers, Cuddebackville, N. Y., \$31,388; George F. McAvoy, Creek Locks, N. Y., \$31,748; John J. Keating, Monticello, N. Y., \$32,266; Port Jervis Cons. Co., Port Jervis, N. Y., \$32,787.50; John J. Guinan Contg. Co., Brooklyn, N. Y., \$32,986; Samuel L. Serlesine, New York City, \$33,304.50; Juniata Co., Philadelphia, Pa., \$33,910.50; F. P. Meekes, Long Pond, Pa., \$34,420. Road No. 449, Burnside-Washingtonville, Orange Co., 3.17 miles—A. Puggiers, Wurtsboro, N. Y., \$20,542.50; Armstrong & Trowbridge, Middletown, N. Y., \$21,399.70; John Arborio, New Haven, Conn., \$21,935; DeGraffe & Hogeboom Inc., Kingston, N. Y., \$22,439; Conway Brothers & Kennedy, Eddyville, N. Y., \$22,623.75; Schunnefunk Cons. Co., Highland Mills, N. Y., \$22,764; George H. McAvoy, Creek Locks, N. Y., \$23,192; Samuel Beskin, Beacon, N. Y., \$23,457; John J. Guinan Contg. Co., Brooklyn, N. Y., \$23,677.50; Michael, O'Brien, Cortland, N. Y., \$23,677.50; Juniata Co., Philadelphia, Pa., \$24,047.25; Samuel Serlesine, New York City, \$24,260; John A. Jova, Inc., Newburgh, N. Y., \$24,397.50; Guarino Cons. Co. Inc., Mt. Vernon, N. Y., \$24,579.50. Road No. 1329, Goshen Village: Church West Main and Main Streets and Greenwich Avenue, Orange Co., 3.70 miles—Samuel M. Serlesine, New York City, \$47,269.25; Heisler & Aldershoff, Albany, N. Y., \$51,574.70; Belmar Contg. Co., Troy, N. Y., \$52,696. Road No. 5591, Newburgh and Cornwall, Orange Co., 0.38 mile—Schunnefunk Cons. Co., Highland Mills, N. Y., \$3,072.50; John A. Jova, Inc., Newburgh, N. Y., \$3,115; Samuel M. Serlesine, New York City, \$3,138. Road No. 5545, Schenectady-Duanesburg, Part 2, Schenectady Co., 5.62 miles—George J. Curran, Middletown, Conn., \$38,777.20; John B. Dower, Ballston Spa, N. Y., \$42,983.30; D. I. Snell & Co., Canajoharie, N. Y., \$48,820.80. Road No. 5589, Lodi-Interlaken, Seneca Co., 5.01 miles—Greenfield Cons. Co., Hornell, N. Y., \$43,719; Thos. Grady, Rochester, N. Y., \$46,454.10. Road No. 5510-A, Bloomingburg-Monticello, Part 1, Sullivan Co., 0.43 mile—Henry McNamée, Eddyville, N. Y., \$7,947.20; Samuel Serlesine, New York City, \$8,188.10; John J. Keating, Monticello, \$8,337.60. Road No. 1079, Spencer-Candor, Part 2, Tioga Co., 4.07 miles—Peter F. Connolly Co., Horseheads, N. Y., \$30,602.83; Lane Cons. Co., Meriden, Conn., \$32,752.50; Hendrickson-McCabe Cons. Co., Spencerport, N. Y., \$32,939. Road No. 1330, Ithaca-Esty Glen, Tompkins Co., 2.48 miles—Greenfield Cons. Co., Hornell, N. Y., \$26,447.20; Richard Hopkins, Troy, N. Y., \$26,986.20; Kendor Eng. & Cons. Co. Inc., Buffalo, N. Y., \$27,618. Road No. 603, Napanoch-Montela, Ulster Co., 10.24 miles—Armstrong & Trowbridge, Middletown, N. Y., \$52,935.37; Cairnie-St. George Co., New York City, \$59,684.75; George H. McAvoy, Creek Locks, N. Y., \$59,742.50.

TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS.				
Va.	Norfolk	1 p.m., Nov.	4..Reconstructing, repairing and repaving with wood block.	W. H. Taylor, Jr., City Engr.
Ky.	Wyckliffe	Nov.	6..Gravelling 2.5 miles of road	Ballard Fiscal Court.
N. J.	Woodbridge	8.30 p.m., Nov.	8..Constructing concrete slag road	A. Keyes, Twp. Clerk.
N. J.	New Brunswick	10 a.m., Nov.	9..Regulating, grading, curbing and paving with brick, asphalt or warrenite	C. A. Oliver St. Comr.
Cal.	Santa Ana	Nov. 16	16..Paving road	County Supervisors.
Del.	Wilmington	noon, Nov.	16..Constructing and improving Philadelphia turnpike	Jas. Wilson, State Hwy. Comr.
SEWERAGE				
Ind.	South Bend	10 a.m., Nov.	9..Constructing pipe sewer	Veronica Sweeney, Clk. B. P. W.
WATER SUPPLY				
D. C.	Washington	Nov.	3..Furnishing wrought and cast iron pipe	Bureau of Supplies and Accounts, Navy Dept.
Minn.	International Falls	Nov.	8..Constructing two driven wells	Annie Shelland, Clk. Bd. of Ed.
LIGHTING AND POWER				
N. Y.	Brooklyn	Nov.	1..Electrical work at Armory	Mayor, Municipal Bldg.
N. Y.	Albany	Nov.	1..Constructing fire alarm station	Isadore Wachsmann, Sec. Bd. Con. & Supply.
Del.	Wilmington	2 p.m., Nov.	2..Installing and connecting underground cable for fire alarm system	Chief of Police.
N. Y.	Buffalo	Nov.	2..Installing electrical equipment in Post Office	Supv. Archt., Washington.
N. J.	Orange	Nov.	15..Furnishing and installing lighting fixtures in Post Office	Supv. Archt., Washington.
D. C.	Washington	Nov.	15..Copper cable, steel wire, street lamps, etc.	Gen. Pur. Officer, Panama Canal.
BRIDGES				
Pa.	Harrisburg	noon, Oct.	30..Constructing 27-foot span reinforced concrete bridge	W. H. Lynch, Comr. of Streets.
Wis.	Superior	2 p.m., Nov.	4..165-foot span concrete bridge	C. J. Morriset, Co. Hwy. Comr.
N. J.	New Brunswick	2.30 p.m., Nov.	8..Constructing reinforced concrete slab bridge	A. J. Gebhart, Dir. Bd. Chosen Freeholders.
Cal.	Santa Ana	Nov.	13..Constructing 200-ft. pile bridge	Co. Bd. of Supervisors.

STREETS AND ROADS

Pasadena, Cal.—The extension of Colorado St. through to Monrovia by way of Arcadia, thus paralleling Foothill Blv., is being considered.

Mobile, Ala.—Voters of Baldwin County have asked board of revenue and county commissioners the privilege of being allowed to vote bonds of \$55,000 to construct Baldwin County end of the proposed Mobile-Baldwin counties highway, bridges and ferries across the Tensas delta to link counties in one territory by highway. County board promptly decided to call election and fixed date for Dec. 13.

Earleton, Fla.—Appropriation has been asked for hard surfacing of road commencing at east line of county near Hampton to run west through Waldo to Gainesville, about 17 miles.

Miami, Fla.—The Tamiami Trail bond election has been carried by overwhelming election.

Pensacola, Fla.—Asphaltic pavement may be recommended for three blocks in city.

Pensacola, Fla.—A special election to vote on bond issue of \$1,000,000 has been called by Board of County Commissioners for Feb. 1. Money realized from this sale, if proposition is approved by majority of property owners of county, will be used in building a system of hard surface highways and concrete and steel bridges.

Ottawa, Ill.—Plan to bond county for construction of system of hard roads within period of five years seems to meet with general approval. Upon a bond basis of \$2,000,000, 200 miles of permanent hard roads could be built.

Huntington, Ind.—Bonds of David Phebus road have been sold to Merchants National Bank of Muncie, Ind. The price was par value \$11,000, \$87.35 premium and \$49.50 accrued interest. There is still another \$11,000 bond issue to be sold. The bonds were offered for sale October 9, but bidding has not been brisk.

Atchinson, Kan.—Grading and paving of several streets are under consideration.

Lawrence, Kan.—Improvement of West Ninth St. is being planned. This road will be macadamized for entire distance except for about 20 rods, and it will be necessary to concrete that to insure permanent results.

Newton, Kan.—Ordinance has been passed providing for paving of part of Ninth St. in city of Newton, Kan.

Salina, Kan.—Ordinance has been adopted providing for paving and excavating of 11th St., in the city of Salina, Kan., between south line of Walnut St. and north line of South St., specifying and selecting material to be used, letting contract for such paving and excavating, providing for cost thereof and specifying manner of payment.

Topeka, Kan.—Falling in line with the movement which is sweeping state from one end to the other, good roads program of Shawnee County Commissioners for fiscal year of 1915-16 is largest ever mapped out for this county. In all, more than \$80,000 will be expended for new bridges, new gravel and oil roads and road work in general. Of this amount, \$30,000 will be used to erect new bridges in all parts of county. Remaining \$50,000 will be spent in repairing and building highways.

Louisville, Ky.—At called meeting of Fiscal Court it was voted unanimously to expend \$7,400 on emergency road work in county, it being opinion of entire court that work should be done before bad weather sets in. Following are roads on which work will be done and amount to be expended on each: First district, Shelbyville pike, \$2,500; Black Ridge road, \$150; Mockingbird Valley road, \$150. Second district, Seatonville road, \$500. Third district, Brown-Auston road and the Preston St. road, \$1,600. Fourth district, 18th St. road, \$2,500.

Hosack Falls, Mass.—Purchase of horse street sweeper is being considered at cost of about \$225.

Au Gres, Mich.—Whitney property holders want better roads and on Saturday, Nov. 25, the question will be decided by vote of people, the object being to bond township in the sum of \$30,000. It is proposed to build a stone road at Baum's corner, and running a mile east, four miles north and a mile west to the town line. Another proposition is a

stone road starting at Riverside school house and running three miles east, a half mile north and a mile to the Fillmore farm; and again, from the German church east two miles, north one mile to the town hall. It is estimated cost will reach in neighborhood of \$750 a mile.

Pontiac, Mich.—Board of Supervisors has decided to submit \$1,000,000 bond issue for good roads to people at April election. According to computation of equalization committee county's valuation is \$68,000,000, increase over 1914 of \$1,250,000.

Pontiac, Mich.—Without a dissenting vote Board of Supervisors Oct. 22 decided to submit the \$1,000,000 bond issue for good roads to people at April election.

Mineola, Mo.—The Mineola mileage of Old Trail road, advertised as worst spot on Kansas City to St. Louis highway, will be rocked before another summer if present plans go through. Road commission of Mineola special road district said question of voting bonds to be used in rocking old trails would be submitted to citizens of district at once. Road commissioners will meet and order election held. They probably will set the date for Nov. 20.

St. Joseph, Mo.—Ordinances have been adopted for construction of sidewalks on various streets.

Camden, N. J.—Ordinance has been adopted directing paving of Van Buren St. from Ferry Ave. to Van Hook St., and Princess Ave. from Wildwood Ave. to Kaighn Ave., with asphalt on a 6-in. concrete foundation. Also ordinance directing paving of Newton Ave. from end of present asphalt paving on Federal St., with Belgian block on a 6-in. concrete foundation, and ordinance authorizing the paving of Clinton St. from Broadway to Newton Ave., with sheet asphalt on a 6-in. concrete foundation.

High Point, N. C.—At meeting Oct. 21 City Council decided to buy one 2-ton motor truck to be used for street repair purpose.

Newton, N. C.—Order for additional granolithic paving was made Oct. 21 at special session of aldermen when property owners on Pine St. asked for sidewalk extending across five blocks.

Marion, O.—Bids will be received at office of City Auditor or the city of Marion, State of Ohio, until 12 o'clock, noon, Saturday, Oct. 30, 1916, for purpose of purchasing \$2,000 bonds. This issue is for the purpose of repairing the streets of the city of Marion, in accordance with ordinance No. 174.

Media, Pa.—Grading, curbing and paving of Jackson St. has been ordered.

Fort Worth, Tex.—Five streets have been ordered paved, following report of engineer that majority of property holders were represented in petitions. Streets to be paved are Fifth Ave. from Lilac St. to Jessamine St. and Jessamine St. from Fifth Ave. to Sixth Ave., to be paved with bitulithic. Petitions showed signed frontage totaled 86 per cent. Jarvis St. and Sunset and Daggett Aves. will be paved with asphalt macadam, petitions showing signed frontage of 69.6 per cent.

Norfolk, Va.—Bids will be received at office of the Board of Control up to 1 o'clock, Nov. 4, for reconstructing, repairing and repaving Granby St. from Main St. to Queen St. The repairs to the street are to be made under resolution of Council, appropriating \$6,000 so much thereof as may be necessary for the purpose.

Norfolk, Va.—A resolution authorizing purchase of four toll roads and bridges within Norfolk County for \$27,200, the amount approved by Circuit Court of Norfolk County, has been adopted by the Commission for purchase and improvement of roads, or road bond commission, as it is generally known. The commission instructed Engineer Murray of the State Highway Department to proceed to get specifications for roads approved by department in order that improvement begin as early as possible.

Seattle, Wash.—Improvement of 29th Ave. N. E. has been ordered.

CONTRACTS AWARDED.

Sacramento, Cal.—That State highway construction is popular among contractors was made evident Oct. 18 when 32 bids were submitted on three units of work. Contracts cannot be awarded until the bids are acted upon by advisory board. On 9-mile unit in Placer County extending from Lincoln to the northern boundary of the county, C. H. & A. W. Garrill of San Francisco submitted the lowest bid, \$47,339.80. The State's estimate was \$56,123.45. State is to furnish in addition to contractor's bid, building material worth \$41,440.40. On 4.2 mile unit in Sonoma County, from Reclamation to Fairville, lowest bid, \$22,189.90, was submitted by Bates, Borland & Ayer of Oakland. The State's estimate was \$31,870.53. Construction material worth \$8,991.22 is to be furnished by the State. Lowest bid on ten-mile unit in Mariposa County was submitted by George K. Daley of San Diego. His price was \$42,748.60, against \$47,178.61, which was the State's estimate. Material to amount of \$6,417.50 is to be furnished by State.

Tampa, Fla.—Board of public works has let contract to Cornwell Construction Co. for construction of 50,000 lin. ft. of concrete curbing, which will be laid on various streets which are to be further improved by paving within short time. Price contracted for is lowest city has ever obtained—25 1/4 cts. per lin. ft. on straightaways and same on curves.

Fort Wayne, Ind.—The Grace Construction Co. has been given contract for grading Winch St. on its bid of 90 cts. a lin. ft., which is 28 cts. lower than the proposal made by C. E. Moellering Construction Co.

Herkimer, N. Y.—The New York Construction Co. has been awarded contract for improvement of West Canada Creek in this village. It is said that bid for work is around \$7,000.

Rensselaer, N. Y.—Common Council has opened bids for proposed street improvements and appointed a committee composed of Aldermen Boyce, Seaton and Baker, to tabulate them. It was found that James J. Rigney was lowest bidder for work to be done on greater number of streets to be improved and included Second St. from Catherine St. to McNaughton Ave.; John St. from Third to Fourth St.; Fourth St. from John to Catherine St.; Riverside Ave. from Belmorde Pl. to Knickerbocker Ice Co.'s house; Lawrence St. from Herrick St. to Convent gate; Walker St. from Third to Fourth Ave. Contractor M. F. Dollard of Albany was low bidder on First St. from Fowler Ave. to Central Ave.; Third St. from Catherine St. north to end of

granite pavement; Fowler Ave. from Broadway to First St. Other bidders were B. W. Mulderry and the Cramont Construction Co., both of Albany.

Hamilton, O.—At meeting of the City Board of Control the Andrews Asphalt Paving Co. was awarded contract to pave North Second St. from Black to Third and Washington Sts. Respective contract prices were \$6,115.50 and \$11,936.

SEWERAGE

Oak Park, Cal.—Installation of alley sewers has been voted on favorably.

St. Joseph, Mo.—Ordinance has been adopted to provide for construction of sewers in portion of sewer district No. 129, located in Gordon Ave. from Hyde Park Ave. to Valley St. and in Valley St. from Gordon Ave. to the Alley First west of King Hill Ave.

Camden, N. J.—Ordinance has been adopted authorizing construction of sewers, culverts or drains in and along Buren Ave. from 27th St. to 29th St.; Central Ave. from Ninth St. to Tenth St., and 21st St. from Wayne Ave. to River road.

Plainfield, N. J.—Bids will be received until 8 p. m., Nov. 1, 1915, for purchase of \$145,000 joint sewerage system bonds. James T. MacMurray is City Clerk.

Batavia, N. Y.—See "Water Supply."

Mansfield, O.—Although City Engineer W. H. Hazeltine has announced the outcome of bidding made by 12 contractors on improvement of sanitary plant, no contract will be entered into for some time, or until careful investigation of low bidders is made. Board of Control will meet at once to consider bid of the Ohio Valley Construction Co., Cincinnati, which was low at \$74,055. Representatives of company will be asked to be present with statements and figures concerning their equipment, past work and method of handling the job. While bids which were opened by Board of Control do not cover all of improvement the greater part of it is made up in specifications. For parts on which bidders entered figures yesterday, Consulting Engineer F. A. Barbour had estimated about \$79,000. The bid of the Ohio Valley Construction Co. was almost \$5,000 lower than the estimate. The results of the tabulation of bids received are: Ohio Valley Construction Co., \$74,055; David Lowensohn, \$79,218; L. Wildeson, \$81,880; G. E. Scott, \$84,238; Indiana Engineer & Constructing Co., \$87,891.25; Cleveland Construction Co., \$87,902.50; E. McShaffrey & Son, \$91,658.60; J. C. Devine Co., \$91,743; S. Small & Sons Co., \$93,180.20; F. L. Rice & Son, \$93,180.20; Robert H. Evans & Co., \$99,197; Pitt Construction Co., \$99,590. It is probable no contract will be entered into for several weeks.

Marion, O.—Resolution has been adopted declaring it necessary to construct a storm water sewer and a sanitary sewer, beginning 150 ft. east of Greenwood St. in Farming St.; thence east to the first alley west of Jefferson St.; thence south in said alley to George St. and the storm water sewer there terminating, and the sanitary sewer continuing west in George St. to connect with present George St. sanitary sewer; also storm water sewer, and sanitary sewer from intersection of Farming St. and Jefferson St. west in Farming St. to first alley west of Jefferson St., in the city of Marion, Ohio.

Dale, Pa.—Permit has been granted for construction of lateral sewer extensions.

East Washington, Pa.—Permit has been issued for lateral sewer extensions.

Philadelphia, Pa.—Dept. of Health has issued permit for lateral sewer extensions.

Selins Grove, Pa.—Dept. of Health has issued permit for construction of lateral sewer extensions.

West Pittston, Pa.—Permit has been issued for lateral sewer extensions.

Park City, Tenn.—Ordinance for issuance of \$10,500 worth of bonds for sewer laterals in Park City has passed final reading. Immediately after ordinance was passed bonds were sold to J. C. Mayer & Co., of Cincinnati, at par with accrued interest.

Suffolk, Va.—The recommendation of Chairman Dr. H. W. Campbell of sewerage committee to buy about \$700 worth of sewer pipes, now that this commodity is selling cheap, has been adopted.

CONTRACTS AWARDED.

Charles City, Ia.—At short meeting of Charles City Council C. L. Hansen was

awarded contract for construction of storm sewers in north end of city in vicinity of 14th Ave., Cleveland and East Sts., for \$6,788.

Beaumont, Tex.—After carefully considering ten bids on sewer extension work, Board of Public Works recommended to City Council that bid of H. W. Cardwell Construction Co. be accepted. Bid for entire work was \$21,716.95. Work will be done under direction of City Engineer Scherer and will be paid for out of sale of \$30,000 sewer bonds voted last May.

WATER SUPPLY

Topeka, Kan.—Plan is being worked out whereby city water service will be extended to residents of east side in district where big sewer is now being built, according to statement made by W. G. Tandy, city commissioner of streets. In building sewer, water pipes to supply the flush tanks of sewers are laid. They are part of sewer system and cost is included in contract for building of the sewer. They are only 1-in. pipes.

Louisville, Ky.—Ordinances have been passed for erection of fire hydrants on various streets.

Eveleth, Minn.—City clerk has been instructed to advertise for bids for installing water line from city main to Drake & Stratton location.

Batavia, N. Y.—Proposition will be placed before taxpayers of city of Batavia on Tuesday, Nov. 9, at special election, to raise \$175,000 to carry out plans recommended by Chester & Fleming, the Pittsburgh engineers, with reference to water system, street lighting and sewage pumping. Common Council has adopted resolutions calling for special election. If carried, it would mean new filtration plant for pure water for city, a rebuilt light plant and sewage machinery.

Gouverneur, N. Y.—Pure water supply is being discussed.

Redstone Twp., Pa.—Permit has been granted General Water Co. in Fayette Co. to install disinfection apparatus.

Royersford, Pa.—The Home Water Co. has been granted a permit to install water filtration plant, pumping station and force main.

Pocatello, Utah.—A Toledo (O.) firm of bond buyers has withdrawn its bid for \$400,000 worth of Pocatello water bonds, and two other bidders will receive consideration by Council.

Niagara Falls, Ont., Can.—Stamford Council will hold special meeting to discuss several matters of importance in connection with new water works system. Main extensions have all been completed, and it is expected Council will make plans to lay mains in several streets that are not supplied by water works at present time.

CONTRACTS AWARDED.

Halfway, Ore.—Contract for laying 28,000 ft. of pipe for new Halfway water system has been let by Halfway Council to Robert Gray, of Portland, at the rate of 7 cts. a ft. Work will be started at once.

Dallas, Tex.—City Commissioners have awarded contract for furnishing the city with 100 tons each of 4-in. and 6-in. cast iron water pipe to National Cast Iron Pipe Co. of Birmingham. The company, which was the lowest bidder, was represented by former Water Commissioner R. R. Nelms.

LIGHTING AND POWER

Pasadena, Cal.—By more than four to one electors of Lamanda Park have decided that old lighting district should be canceled. This will enable holding of another election for new ornamental lighting district and this election will be held in about 50 days.

Batavia, N. Y.—See "Water Supply."

Middletown, O.—Bid of Hackedorn Construction Co. of \$1,050 for placing of conduit for electric wires to be used in lighting Middletown levy bridge has been referred to engineer.

Fort Worth, Tex.—City Commission has acted favorably on petition filed by North Side property holders for extension of "white way" system of illumination along North Main St. from Paddock viaduct to Exchange Ave.